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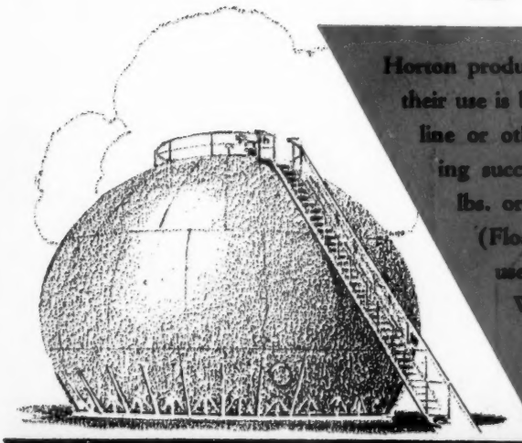

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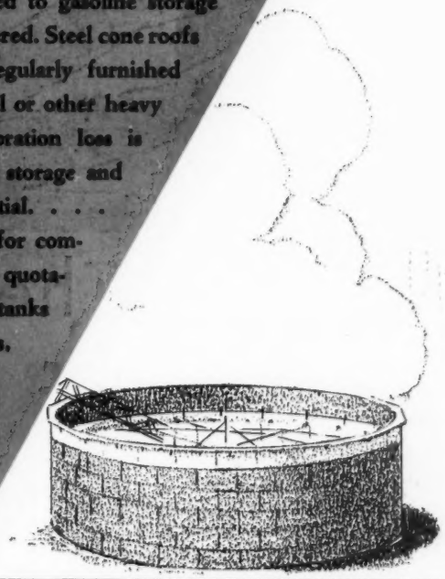

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East Texans Blocking Proration Plans

Highest production in 1930, week ending Feb. 22, average daily output 2,699,096 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

Bringing in Dozen Wells a Day Makes Task of Cutting Production to Allowed Figure a Hard One

By James McIntyre

Lowest daily average crude oil production in the United States during 1930 was for week ending Dec. 27 with average output of 2,144,074 bbls.

The difficulty to be experienced in bringing down the East Texas Field to an average production of 160,000 bbls. per day may be seen when it is considered that in the past two weeks, or since proration became effective, 162 wells were completed, some of them very large initial producers. Previous to the completion of these wells the field was producing over 350,000 bbls. per day. In the past week it was brought down to an average of 256,450 bbls. in the face of the fact that wells were being brought at an average rate of practically a dozen a day. What the production would be if all the wells in the three pools were permitted to produce their maximum is impossible to accurately estimate, but the results would be appalling. There were more than 500 producing wells in the three pools comprising the field at the opening of this week.

Production in Oklahoma was cut down about 34,000 bbls. per day in the past week and the net decline in the United States was 29,747 bbls. per day.

The power of the State to regulate the production of oil and gas in California was strengthened by the passage of Senate and House bills in the past week. The legislation put through on the Pacific Coast is regarded by many as a model for the uniform legislation recommended for passage in all oil-producing states.

Time will not permit of the passage of the Howsley bill in the Texas legislature, and it may take a special session of the legislature to establish a law that will permit the State to regulate the production of its chief natural resource without delays caused by law suits on the part of recalcitrant producers and others.

Two more companies applied the Oklahoma-Kansas crude oil price scale to the East Texas fields in the past week, these having been The Texas Company and the Arkansas Fuel Oil Co., but much of the production of that field is still being sold far below the weighted average price of 65 cents offered by the large oil companies.

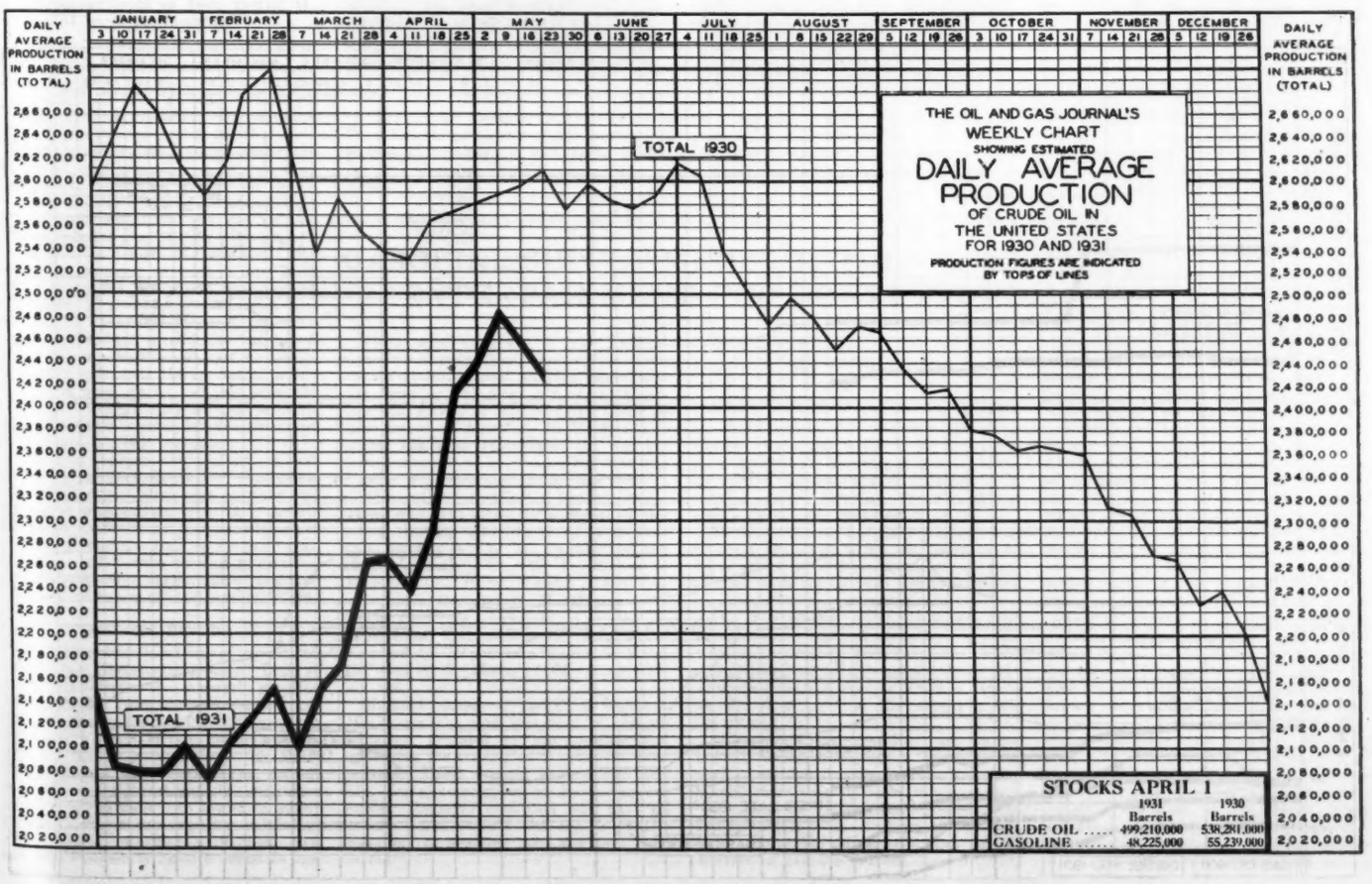
Seasonal demand for gasoline to which may be added a recent period of improved weather have had a good effect on consumption, but prices have not yet felt the influence of the increase.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for week ended May 16 and a comparison with the previous week follows:

	May 16	May 9
Oklahoma—		
Oklahoma City	173,570	222,145
Seminole-St. Louis	162,130	147,660
Remainder of State	237,725	237,396
Total Oklahoma	573,425	607,201
West Texas—		
Hendricks	44,862	44,330
Yates	75,320	74,812
Remainder	92,986	92,812
Total West Texas	213,168	211,954
North Louisiana	39,775	39,825
Arkansas	46,755	46,955
North Central Texas	80,146	80,049
Texas Panhandle	61,250	55,673
East Central Texas	311,647	322,771
Kansas	107,480	108,305
Total Mid-Continent area	1,433,646	1,472,733
Gulf Coast	182,257	181,871
Southwest Texas	68,123	67,636
Eastern	111,500	111,500
Rocky Mountain area	99,516	92,299
California—		
Santa Fe Springs	72,500	73,500
Long Beach	87,500	88,000
Playa Del Rey	30,000	29,500
Elwood	34,250	35,500
Ventura Avenue	43,250	46,000
Kettleman Hills	38,000	31,500
Remainder of State	230,750	231,000
Total California	536,250	535,000
Total United States	2,431,292	2,461,039

→ **Decrease 29,747 Bbls. Daily** ←



Natural Gasoline Prices Advance

Steady Buying Brings Reversal in Price Trend on All Grades. Little Change in Refinery Gasoline

By C. O. Willson

In response to steady buying which got under way early in the month, natural gasoline prices in Oklahoma and other Mid-Continent areas moved up from the low levels established a week ago. Grade AA which was freely traded as low as 1⅝ cents early last week advanced to 1½ cents the latter part of the week and the first of this week was quoted at a price range of 1⅝ to 1¾ cents. Grade A was quoted at 1¾ to 2 cents and the remaining grades at 1½ cents.

The development was encouraging to refiners as well as manufacturers. It has been conceded by the former that no sustained recovery was possible in refinery gasolines until the natural gasoline market improved. Recent developments have shown that jobbers and other buyers have taken advantage of the low natural gasoline quotations to prevent advances in the regular refinery grades of motor fuels. By buying low gravity and high endpoint naphthas and blending up to 50 per cent natural gasoline, jobbers were able to secure a motor fuel at a total cost under the prevailing market for refinery gasolines. These products have been especially attractive to price-cutters in the retail end who have been anxious to secure lower priced material to compete with prices established by the larger distributors.

Refinery Gasolines

Price levels in refinery gasolines over the week were generally unchanged. Most refiners continue to report an improved demand. So far as these refiners are concerned prices could easily advance. However, there are still a few weak spots in the gasoline market in Oklahoma and competing territories. Preparations were being made to resume operations at a couple small plants in Oklahoma and without regular outlets the gasoline probably will find its way to the open market at low prices. There has been some small buying by a couple major companies. These concerns require better than U. S. Motor gasoline both in distillation range and antiknock rating and are not interested in the cheapest products which were again quoted direct to the trade as low as 2¾ cents basis Group 3.

Buying of fuels regardless of grades including furnace oils material and gas oils is practically at a standstill. If any substantial quantity of fuel was forced on the market with the present attitude of buyers, it is anybody's guess as to what price the material would slump before being taken off the market. Lubricants were steady following the price declines of last week.

Natural Gasolines

Just how lasting the price recovery in natural gasoline will prove to be, remains to be seen. There is so little confidence in the trade in the lasting qualities of anything of a favorable nature that many interpret the advance as a flash in the pan which will be followed by additional declines.

Despite this bearish attitude it is certain that price advances in natural gasolines have been brought about by an improved situation in regard to supply and demand. The available supply is well taken care of for the month so that any additional buying should be reflected in additional price increases.

Buying has come from several sources. The Standard Oil Co. of Indiana which has been a consistent buyer for several weeks is reported to have closed orders for approximately 300 cars for May delivery. The purchases of this company include the entire output of one company and it is understood that negotiations are under way on a contract over the next several months with the manufacturer.

A large manufacturer who earlier in the month was selling, also bought the latter part of last week. Several regular buyers increased their purchases for May delivery. At least two independent export buyers were in the market, one of the orders being for approximately 550,000 gallons for immediate delivery.

The export buying came somewhat as a surprise as this outlet for natural gasoline has been closed for some time so far as Mid-Continent manufacturers are concerned. Operators generally have blamed the export situation for the decline in their market. The bulk of the Mid-Continent natural gasoline for several years has moved south to the Gulf Coast refineries and terminals where it is largely used as blending material in

(Continued on Page 153)

REFINED MARKET BAROMETER

Price declines again featured the refined market over the past week. No general improvement was noted in the gasoline tank car market, scattered reductions being reported from several areas reflecting a continued unsettled condition in tank wagon and retail markets where price declines have spread. Natural gasolines strengthened in the Mid-Continent but in California, prices were reduced. The demand for kerosene has improved at several interior points but the coastwise and export market continues weak. Due to a slow demand at the close of the main consuming season, weak spots in all classes of fuels were apparent. Although the motor oil demand is improving, the general condition in regard to supply and demand has not brought any improvement in the market for neutral oils and stocks. Wax continues inactive with practically no new export business.

Mid-Continent—Natural gasolines, only product to show an advance. Refinery gasoline prices generally unchanged with seasonal gain in demand. Kerosene more active and prices firm. Fuel oil, gas oil and distillate weak and prices reduced when any changes were made. Prices on cylinder stocks and neutral oils steady following reductions of previous week.

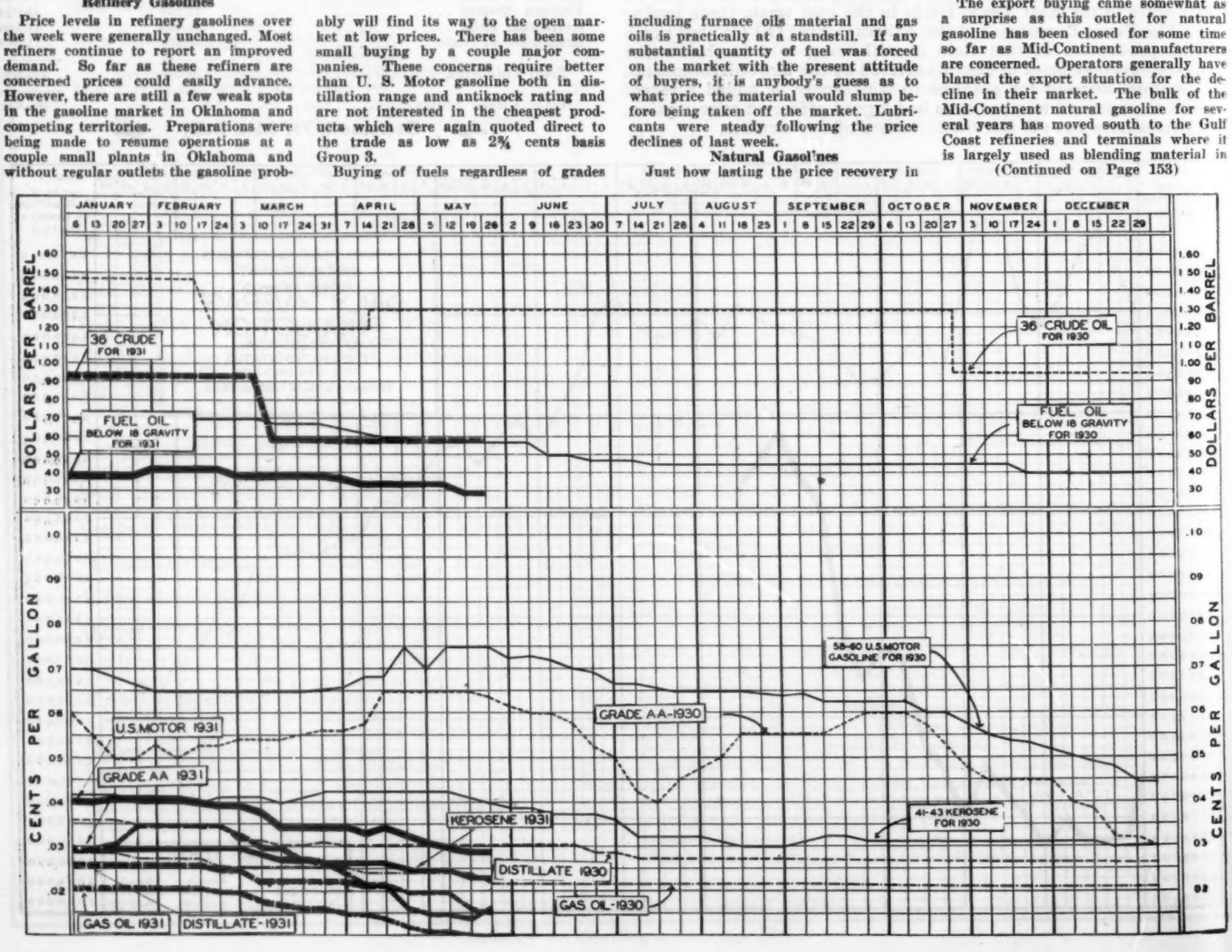
East Coast—Refinery tank car prices reduced with price cutting general in tank wagon and retail markets. Posted prices on kerosene with bulk of business at lower levels. Better domestic demand for cylinder oils. No change in fuel oil and Diesel oil. Gas oil prices firmer following recent reductions. Slow demand for wax.

Chicago—Gasoline continues unsettled due to conditions in retail market. Less firmness in kerosene. Practically no demand for furnace oils. Expect improvement in industrial demand for fuel oils.

Pennsylvania—Gasoline and kerosene steady with fair demand. Fuel oil prices lower. No important changes in bright stocks and neutral oils.

California—Natural gasoline prices lower and refinery gasoline market weak. Fuels steady. Light demand for kerosene.

Gulf Coast—Gasoline market continues weak. Fuels and red and pale oils unchanged.



Natural Gasoline Manufacturers Meet

Strained Economic Conditions Induce Closer Co-operation Among Companies Which Will Be of Permanent Benefit

By W. T. Ziegenhain

Appreciative of the strained economic conditions under which the industry is operating, members of the Natural Gasoline Association of America met in Tulsa this week to discuss all phases of its problems. This is the tenth annual convention of the association and during the three days of meetings starting Tuesday, the technical developments with respect to plant design, quality of products and the manufacture of liquefied gases required most of the discussion but there was also an intense interest shown, among the executives in particular, with respect to the merits of plant consolidations and the exchange of gas in the various fields for the purpose of minimizing operating costs.

In regard to the trend in the future, various speakers presented the view that larger units and superstabilization with the production of specialties as by-products, will become the order of the day as new fields are discovered.

While the present problems appear difficult to solve and the predictions of the future seem to call for investments on a still larger scale, those longest in the industry show no alarm in discussing this trend. They say it is a natural development and follows the course of all manufacturing industries. They believe the business has been so well established and the research program of the past five years has enabled manufacturers and marketers to so thoroughly "sell" natural gasoline to its consumers on the basis of its true merits, the problems that will arise will be principally those which call for further economies in operation accompanied by an ever gaining movement toward improvement in quality and the production of a greater number of specialties.

President's Address

This was best outlined in the president's address following the opening of the meeting by Frank L. Chase of the Lone Star Gas Co. Tuesday afternoon. In this, Dr. E. R. Lederer, vice president of the Texas Pacific Coal & Oil Co., said:

"Unfortunately, we cannot undertake the initial step towards the improvement of economic conditions within our industry. Our activities depend almost entirely on the producer of oil and the refiner. We are only too glad to join with them in every sensible effort. We have cut our operating expenses to such a low level that a few years ago would have seemed impossible. There is a limit for such curtailment, if we are to maintain the quality of our product, provide for safe operation and the welfare of our employes. It is only fair that the pressure, which is brought upon us by the low price the refiner is willing to pay for our product, will have to be shared by the producer, from whom we buy the gas.

"We can reduce the output of our plants by 'superstabilization,' and produce gasoline with such high recovery and low vapor pressure as to attract the refiner and enable him to pay us at least the cost of our gasoline so we can break even; this will reduce current production and a considerable percentage of our output could be taken off the market in this manner."

Condemns Blending

Continuing his discussion of conditions within the industry, Doctor Lederer sought to discourage natural gasoline manufacturers from indiscriminately going into the business of blending naphthas with their products to produce motor fuels for direct consumption. He said: "I rather look with disfavor on the efforts of some natural gasoline manufacturers to blend their own brand of motor fuel by buying cheap naphtha and bringing it up in volatility with their own product. Frequently such a blend is not up to specifications, is poor in performance and tends to discredit natural gasoline. It also brings them in direct competition with the refiner. Such products are generally sold below the legitimate posted price and add to the confusion and instability of the market. However, we cannot blame a gasoline manufacturer for securing in this manner an outlet for his product which the refiner will not or cannot buy."

In conclusion the president presented a strong plea for continued co-operation within the industry and offered a bit of optimism regarding the future when he said:

"There is justification for mild optimism at present; the interstate oil compact formulated by the Advisory Board of the nine largest oil states is gradually but surely being shaped into acceptable form. Honest and effective proration will protect all of us against selfish and short-lived interests. Our surplus stocks should be depleted gradually during the coming summer season of higher consumption and generally better prices. If we study the statistical position of our industry and learn a lesson from our past experiences, if we apply the laws of economics instead of considering them a theoretical blunder, and if we forget personal ambition and greed, and the desire to enrich ourselves at the other fellow's expense and failure—in short, if everybody will follow the law of supply and demand and the idea of live and let live—then we shall extricate our industrial and commercial life from the present crisis and build the foundations for a sane and prosperous future."

Committee Reports

Following the president's address the reports of the various committees were read. Some of these were in the form of progress reports. Under the program of standardization, which the association undertook two years ago, many investigations are under way with the purpose of standardizing everything connected with the operation of the plants, so far as practicable. The adoption of a standard form of gas contract is one of the factors which has been realized. A standardization of report forms is showing progress. The standardization of parts of the plant equipment is undergoing a careful study.

Because of the low prices prevailing on natural gasoline, the report of the sales managers committee was followed with considerable interest. A. T. Sherer of the Sinclair Oil & Gas Co. and chairman of this committee said:

"It is the general feeling that the industry is now headed toward the production of even more stable natural gasoline grades than in the past or at present, with vapor pressure limits ranging from 10 to 18 pounds Reid for material for coastwise or export movement, to 20 to 22 pounds for domestic, all of which are highly desirable products according to many of the recent inquiries from the refiners. This follows history, due to the fact that prior to the large production of the Seminole period, considerable 'BB' and 'C' natural gasolines were produced, but at that time the further study and education caused the demand to centralize to a very great extent upon Grade 'AA.' The new trend to more stable products will reduce the output of natural gasoline and increase the percentage used by the refiner for the production of ideal motor fuels.

"This leads to another thought which should be given consideration by the natural gasoline manufacturer, that as these more stable grades are manufactured, the cost of gas for the manufacture of natural gasoline at the gasoline plants will become an increasing percentage of the gross returns of the manufacturer. This is due to the fact that the producers are paid upon the basis of the volume of gas on the test contents run in the field, which will remain constant, regardless of the product shipped, but the increased cost of gas will be occasioned by the higher prices which will be received for these products and which react for the benefit of the producer as most of the contracts are based upon the average selling price of the product shipped by the manufacturer. This is a fact which cannot be escaped at the present time.

"This committee has also kept several other threads of effort running through its regular meetings. The possibility of new or increased markets has always been a major subject. Much time has been devoted to the sale of more stable gasolines wherever new markets could be developed. Discussion covered closer contacts with refinery problems, pipe line contracts with adjacent refineries guaranteeing all year around usage, Navy basis contracts where refiners desired a definite cost of naturals based upon sell-

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HEADS OF ASSOCIATIONS HOLDING MEETING

Dr. E. R. Lederer (left), vice president of the Texas Pacific Coal & Oil Co., Fort Worth, president of the Natural Gasoline Association of America, and M. H. Kotzebue, president of the Tulsa Boiler & Machinery Co., Tulsa, president of the Natural Gasoline Supply Men's Association, which are holding annual meetings in Tulsa.

GASOLINE SUPPLY MEN FURNISH ENTERTAINMENT FOR CONVENTION

Three new directors of the Natural Gasoline Supply Men's Association were chosen at the annual meeting held Tuesday morning, the first day of the three-day convention of the Natural Gasoline Association of America. E. H. Triphaus of the Tagliabue Instrument Co. was the fourth director to be chosen, but this was simply a re-election as he has been a director of the association for two years. These men will serve for a period of two years starting January 1 of next year and include A. V. B. Candler of the National Supply Co., W. D. Moorer of Moorlane Co., B. W. Vinson of the Vinson-Canter Co. and E. H. Triphaus.

The retiring directors are M. F. Waters of Hanlon-Waters, Inc., A. J. Kerr of the Mid-West Equitable Meter Co. and R. E. Howe of the Atlas Supply Co.

M. H. Kotzebue of the Tulsa Boiler & Machinery Co. and president of the association presided at the meeting and called for the reports of the various committees. These reports showed the supply men's association to be in an excellent financial condition and that all of the arrangements for the entertainment of the gasoline men had been completed.

This proved true as the convention progressed. The hot lunch served at noon on Tuesday was a new feature which probably accounted for the big increase in the registration shortly after 12 o'clock. This was followed by the usual stag smoker on Tuesday night featured by several vaudeville acts followed by a moving picture carrying the title, "Prosperity in the Oil Business."

The supply men had been requested to suspend the free lunch on Wednesday noon, which gave those attending the convention a chance to form separate groups to choose their own eating places.

On Wednesday night, following the membership dinner of the gasoline association, the supply men furnished music and decorations for the annual dance. On Thursday noon a cold lunch was served as the final part of the supply men's program.

Officers of the gasoline association heartily thanked the supply men for their part in making the meeting a success and special mention was made of the various entertainment committees under the chairmanship of A. J. Kerr of the Mid-West Equitable Meter Co. and M. F. Waters of Hanlon-Waters, Inc.

Nearly All Stripper Wells Cared For

By Means of Trading, Big Oil Companies in Oklahoma Found a Way to Save Old Properties From Abandonment

By L. G. E. Bignell
Petroleum Engineering Editor

The latest estimates available indicate that all but a few barrels out of a total of approximately 31,500 bbls. of oil left without pipe line connections in eastern Kansas and northeastern Oklahoma on December 31, 1930, when the Prairie Oil & Gas Co. ceased to purchase crude in those districts has since been connected to new outlets.

It is reported that of the total distress oil at the first of the year about 11,000 bbls. existed in eastern Kansas and the pipe lines in that area through the co-operation of committees working with the producers have made new connections to all but a few wells and the amount of oil still without outlet is estimated at less than 100 bbls. in that area.

Of the remaining 20,500 bbls. of distress oil existing in Oklahoma on December 31 the purchasers of crude oil have made arrangements to connect to all but 50 or 60 wells and it is thought that even the few remaining distress wells will be taken care of soon.

The work of finding relief for this oil, which is produced by several thousand wells having an average daily production of less than 1 bbl., has been carried on by a committee of purchasers of crude oil and a committee of producers.

When the Prairie Oil & Gas Co. ceased taking this oil the producers left without connections were in a state of confusion and a great deal of time was lost because the producers acting as individuals did not know to whom to apply for relief.

Recognizing this condition, a committee headed by E. B. Lawson of Tulsa started to collect data on crude oil supply and probable outlet, and this committee carried on during December, January and February and made a report printed in the February 19 issue of The Oil and Gas Journal showing that even at that late date there was still about 3,200 bbls. of distress oil in Nowata, Rogers, Washington, Osage, Tulsa and Wagoner Counties. In addition to this, there was other oil without connections in Creek, Okmulgee, Pawnee and Craig Counties, which was later taken care of by various means.

New Committee Takes Over Work

Even while the Lawson committee was assisting operators in securing new connections another committee headed by Winston P. Henry of Tulsa was busy with this problem and the results accomplished by that committee are given below. This committee was made up of Mr. Henry, chairman; R. B. Martin, Tulsa; Kirol R. Holm, Winona Oil Co., Tulsa; J. B. Steele, Kewanee Oil & Gas Co., Tulsa; George Van Dall, Tulsa; H. G. Ellis, Wiser Oil Co., Bartlesville. T. R. McSpadden, Nowata, and W. H. Waid of the Indian Agency, Pawhuska, Osage County.

The committee first secured a map of the area under consideration and marked upon it the pipe lines of the various companies serving the districts. This area extended from Okmulgee County on the south to the Oklahoma-Kansas State line on the north.

When this map was completed it was possible to locate on it the properties in need of new connections and then to direct the producer to the pipe line company best able to take his oil. This avoided confusion occasioned by producers calling upon one pipe line company after another trying to locate the purchaser who could best take his oil. This service rendered by the committee was greatly appreciated by crude oil purchasing companies and they all agreed to assist in every way possible.

A great deal of this distress oil found outlet through contracts made directly with purchasing companies without further recourse to the services of the Oklahoma stripper well committee headed by Mr. Henry, after the two interested parties had been brought together. In many instances new lines were laid to properties needing outlet for oil without obligations on the part of the producer and often without expense to him.

After this first group of properties had been cared for by direct negotiations between producer and crude oil purchaser, there were still properties without relief because it was found that their only economic outlet to the market was through the old lines of the Prairie Pipe Line Co. because of their remoteness from other pipe lines.

The Exchange Arrangement

The Prairie Oil & Gas Co. quit purchasing oil because a number of refining companies which the Prairie had been serving had cancelled their contracts for crude. The Prairie found itself in a position where it could serve the remainder of its refining customers from its own production and from its large supply of crude oil in storage. However, the company offered the use of its pipe lines to gather and ship the oil providing other pipe line companies would purchase a like quantity of oil from stripper leases of the Prairie in other fields.

Out of this situation was developed a system of making exchange of oil. To accomplish this the Oklahoma stripper well committee accepted data on all wells still needing connections and listed this production by counties and then totaled the amount of crude offered. When this amount was known it was offered to the Prairie Oil & Gas Co. for handling through the Prairie Pipe Line system and that company offered in exchange a like amount from properties owned by or contracted to the Prairie Oil & Gas Co. to be run by other purchasers of crude.

By this general method of grouping properties to be turned over to the Prairie Oil & Gas Co. account and balancing against them other properties to be run by other purchasers, a total of 2,328 bbls. of daily production has been turned over to other crude oil purchasing companies by the Prairie Oil & Gas Co and it has in turn agreed to purchase and run through the Prairie Pipe Line Co. system a total of 2,232 bbls. of oil daily.

By this arrangement oil from 109 properties owned by or contracted to the Prairie Oil & Gas Co. has been exchanged for the oil run from 604 properties of other companies. The location of these leases from which the Prairie Pipe Line Co. is running oil in Oklahoma in co-operation with the Oklahoma stripper well committee is as follows:

County—	Number properties
Craig	3
Creek	25
Nowata	80
Okmulgee	5
Osage	71
Pawnee	2
Rogers	56
Tulsa	82
Wagoner	47
Washington	233
Total	604

The location of the leases from which other purchasers are running oil produced by the Prairie Oil & Gas Co. is as follows:

County—	Number properties
Jefferson	4
Carter	16
Osage	38
Creek	32
Tulsa	19
Total	109

Other Connections Made

In making this exchange it was agreed that each well and lease could run only that amount of oil credited to it at the time the exchange agreements were entered into between the Prairie Pipe Line Co. and the other purchasers. No stored oil could be run under this arrangement because of the lack of an equal amount of oil to exchange for it.

The purchasers of crude oil that have aided in this arrangement are taking oil in approximately the amounts listed below:

	Bbls.
The Texas Company	225
Gypsy Oil Co.	741
Carter Oil Co.	497
Shell Petroleum Corp.	102
Barnsdall company	399
Johnson Oil & Refining Co.	285

In Washington County the National Refining Co. has made connections to 107 leases, according to the last report available, and is taking on more oil as rapidly as possible. This company has a complete gathering system in the county

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CONTRACTS AWARDED, WORK BEGUN ON SUN PIPE LINE, EAST TEXAS

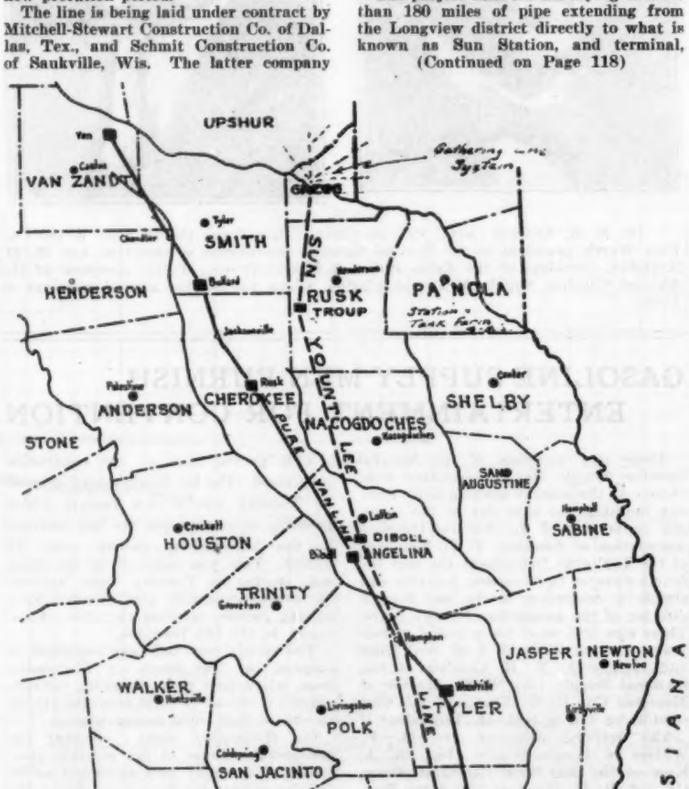
By Neil Williams

BEAUMONT, Tex., May 18.—Contracts were awarded and work was actually started the past week by Sun Pipe Line Co. for laying a 10-inch pipe line from East Texas fields to the Gulf Coast. Plans call for the completion of the project by the latter part of June in time for nominations at the opening of the new proration period.

The line is being laid under contract by Mitchell-Stewart Construction Co. of Dallas, Tex., and Schmit Construction Co. of Saukville, Wis. The latter company maintains a branch office at Beaumont. The former contractors have the north half of the project while the southern half is being put in by the Wisconsin and Beaumont company. Pipe, being supplied by Jones & Laughlin Steel Corp., Pittsburgh, Pa., already is being moved in.

The project calls for the laying of more than 180 miles of pipe extending from the Longview district directly to what is known as Sun Station, and terminal,

(Continued on Page 118)



Map of pipe line being laid by Sun Pipe Line Co. and Yount Lee Oil Co. from East Texas to Gulf Coast tidewater. Locations of initial stations also are indicated.

California's New Conservation Law

Provides for a Commission and Gives It Wide Powers to Enforce Conservation. Defines Waste, Which Includes Economic Waste

By L. P. Stockman

LOS ANGELES, Calif., May 18.—Upon the conclusion of the oratorical barrage at Sacramento a few days ago the oil industry was presented with three bills duly enacted by the California legislature. The last of this trio of bills was not approved until two hours before adjournment, a delay having been encountered because all of the measures were amended from three to six times each.

The special significance which attaches to the bills in question lies in the fact that stabilization of the oil industry on the Pacific Coast is almost entirely dependent on their successful enforcement. These measures, Senate Bill No. 362, Senate Bill No. 363 and Assembly Bill No. 1,444, will become effective 60 days after signature by Governor Rolph.

The bills are not expected to entirely correct all existing evils but should go a long way toward alleviating present chaotic conditions and prevent a further demoralization. Ultimately these regulatory and compulsory curtailment bills should result in higher prices for crude and refined oils, but their immediate effect is problematical as they will not become effective until about August 1.

Assembly Bill No. 1,444 abolishes the office of oil and gas supervisor now held by Reed Bush and creates a new subdivision in the Department of Natural Resources designated as the Division of Oil and Gas. The chief of this new division who will be known as the commissioner of oil and gas, will be appointed and hold office at the pleasure of the Governor. It is believed that Bush will be appointed assistant of oil and gas, in which position he would become secretary of the commission.

Creates Commission

Senate Bill No. 362 creates an Oil Conservation Commission of six members comprising one member from each of the five oil-producing districts of the State and the commissioner of oil and gas who will be ex officio chairman. Members of the commission will be elected by a plurality vote of operators, each of whom will have one vote irrespective of the amount of acreage held. Two members will serve for a period of two years, two for three years and one for four years. The commission has power to require sworn statements from producers and refiners covering production and stocks of crude and refined oils as often as necessary. Although under the Department of Natural Resources, the commissioner of oil and gas is delegated supreme authority on matters pertaining to oil and gas and as such has veto power over all orders issued by the commission.

After prohibiting waste the bill defines waste to include "underground waste, or destruction without beneficial use; surface waste, or destruction without beneficial use; waste by reduction of the total quantity of recoverable crude petroleum oil in any underground source of supply by the careless or improper drilling or operation of wells, and the waste incident to or resulting from the production of crude petroleum oil when the current production together with the amount of crude petroleum oil and its refined products in storage exceeds current requirements for use within and for shipment to points without the State, and for the maintenance in storage of such reserves of crude petroleum and its refined products as are reasonably necessary to meet and insure the continuity of an adequate supply of crude petroleum and its refined products for such current requirements determined upon the basis of past experience, existing conditions and estimated future requirements." This measure, Senate Bill No. 362, makes it a misdemeanor for failure to comply with orders and regulations established by the commission and provides that in the event of a contest wells and properties must be shut down to make up for any excess production if the ultimate decision is favorable to the State.

Power of Commission

The commission is granted power to subpoena witnesses and records and is authorized to institute legal proceedings in the Superior Court to compel adherence to rules and regulations. The bill also prevents and prohibits any third party from removing excess production in violation of curtailment orders from the property of any member failing to comply with orders issued from time to time.

Senate Bill No. 363 provides that "Any well drilled hereafter for petroleum oil or gas, or any well drilled hereafter and permitted to produce oil or gas which is located within 100 feet of an outer boundary of the parcel of land on which such well is situated, or within 100 feet of a public street or road or highway dedicated prior to the commencement of drilling, or within 150 feet of any well being drilled or within 150 feet of a well theretofore drilled which is producing oil or gas, or one which is capable of producing oil or gas, is hereby declared a public nuisance, provided that where several contiguous parcels of land are operated as a single oil or gas lease or operating unit the term 'outer boundary line' shall mean the outer boundary of the wells included in such lease or unit. Each day in which the drilling of such well is carried on or in which such well is permitted to produce oil or gas shall be deemed a separate nuisance. The provisions of this act shall not apply to any field producing oil or gas on the date this act becomes effective."

Solons Can Not Reach Howsley Bill

Measure to Tighten Conservation in Texas May Come Up in Special Session. Oklahomans Plan to Stand Pat

By James McIntyre

The California State legislature has passed the Sharkey compulsory proration bill. The Oklahoma State-wide Proration Committee has recommended that the Corporation Commission continue proration in Oklahoma with an order extending it four months, on a basis of 550,000 bbls. per day, at the same time suggesting changes in Oklahoma City which, while they will not increase the production, will regulate the volume to be produced from each of the four producing zones in that State. Oil proration sponsors in both houses of the Texas Legislature on Monday conceded the new Howsley oil proration bill cannot be brought up in either house before scheduled adjournment Friday, or even if the session is extended another week. They predict it will be offered in a special session of the legislature some time this summer. The bill is designed to increase the authority of the State Railroad Commission to regulate the production of oil and gas in the State. There was much talk of extending the session or in favor of an extra session to obtain action on the measure which is deemed of vital importance to the industry not only in Texas but wherever oil is produced. Objection to the present proration plan in Kansas was voiced in the past week in the form of a letter to Thurman Hill, member of the Public Service Commission, written by Marvin Lee, president of the Kansas unit of the Independent Petroleum Association.

The Texas legislature is scheduled to adjourn May 22. The Howsley bill which was introduced late in the session took its place under a host of bills, few of which will have any chance to even be considered. Every effort has been made to have the bill advanced on the schedule because of its direct bearing on the serious condition of the Texas oil industry. While objection to the bill has been clamorous and has come from not only East Texas but from some operators in other fields and uninformed men outside the oil business, there has been an active and influential element of oil men, among them being operators in the East Texas Field and other business and professional men who are heartily in favor of its passage. However, at this writing the element of time seems to be against it.

If a special session is called the bill may be presented again or it may be set aside and a bill on the lines of the legislation just passed by the senate and house in California may be substituted. It is understood that the Oil States Advisory Committee regards the Sharkey bill (the California measure) as model legislation and that committee at its meeting in Denver on August 10 is expected to further its adoption by state legislatures in the various oil-producing states where such legislation is necessary.

Continue Proration in Oklahoma

The State-wide Proration Committee of Oklahoma has made a survey of the existing oil production situation and received favorable reports indicating that strong support immediately would be given to effective proration of East Texas on the basis of 160,000 bbls. per day and at the Mid-Continent posted price.

The committee members were unanimously of the opinion that effective demand for Oklahoma crude for some time will not exceed 550,000 bbls. per day and that present orders of the Corporation Commission should be extended on that basis.

In order to give greater stability, the committee recommends that the Corporation Commission be requested to make its next orders extend for a period of not less than four months from June 1, with the usual flexible provisions to allow recognition of increases and decreases in demand.

It is recommended that for the present there be no changes in the allowable production from the various pools or areas but the committee indorses the view that the Oklahoma City area has now been developed to a point where it is evident that there are four common sources of supply within the developed area and that, as a matter of justice, the said different sources of supply should receive individual treatment so that unfair and inequitable taking within and as between said several sources of supply may be avoided.

The four distinct sources of supply now apparent in the general Oklahoma City area are as follows:

1. The lime area which was developed first; (2) the lower Simpson sand area which includes the so-called "school land sand," the "Lowery sand" and the "Johnson sand"; (3) the north Wilcox Pool; (4) the south Wilcox Pool.

Differences in situation and condition of these various separate pools strongly indicate that the total market outlet for the Oklahoma City area should be divided up among them in a more equitable manner; the details of such a plan to be worked out by the Oklahoma City operators and submitted to the Corporation Commission for inclusion in its next order if approved. It being understood, however, that such a separation into distinct pools shall not work an increase in the aggregate allowable production from the entire Oklahoma City area.

One Kansan Protests

Protesting the schedule of proration in Kansas, Marvin Lee, president of the Kansas unit of the Independent Petroleum Association, has appealed to Thurman Hill, member of the Public Service Commission and of the Oil States Advisory Committee, for relief for Kansas producers.

In a letter to Hill, Lee said "members of the Kansas division view with misgivings the present tendency to allow other states an increase in daily production and to hold Kansas to its past output."

Kansas producers are attempting to effect true proration based upon actual figures, while other states' proration was based upon "false estimates," Lee said.

"Many Kansas producers have made important discoveries that have disclosed large areas of high potential and low production costs," he said. "Eight such pools are now 100 per cent shut in, with one to a few wells to the pools. These few wells, without drilling offsets, could produce about 30,000 bbls. per day. Pool development would give immense potentials.

Injunction Refused

The suit in federal district court in San Antonio in which Macmillan Petroleum Co. seeks to restrain the Texas Railroad Commission from enforcing the oil proration law in East Texas will probably be carried through the United States Supreme Court.

Judge DuVal West declined to issue an order on the injunction petition against the railroad commission and its proration employe, A. B. Capers, after a conference in chambers with a representative of the petitioner and the attorney general.

Instead, he got in communication with the federal circuit court of appeals at New Orleans, suggesting that three judges of that court hear the petition either at New Orleans or Austin on Thursday, May 21.

This course was decided upon, it is believed, since the permanent injunction would require that the petition be heard by three judges, because it involves Federal constitutional rights.

Alfred Macmillan individually and as trustee of the petroleum company, alleges that the proration law and its enforcement interferes with use of private property, a right guaranteed by the federal constitution.

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New Developments in Gasoline Plants

Larger and Simplified Units Favored in More Recent Construction. Growing Acceptance of Superfractionation

By G. M. Davidson
Empire Oil & Refining Co.*

The question of what is new in natural gasoline plant operation naturally starts one reminiscing of the first Mid-Continent plants. It really was not so long ago. They were built with some pipe and a welding torch. Maybe experience dictated the particular design and maybe Wescott's handbook or a Bureau of Mines publication helped, but the ingenuity displayed was something of which we may still be proud. In fact, there is, in general, little to apologize for, as many of these plants are successfully operating today.

PUBLISHED IN THIS ISSUE

Other papers delivered before the meeting of the Natural Gasoline Association of America appear in this issue of The Oil and Gas Journal on the pages shown.

R. C. Alden, Phillips Petroleum Co., page 74.
G. G. Oberfell, Philfuels Co., page 67.
G. G. Brown, University of Michigan, page 70.
Technical Committee Report, page 141.
Summaries of other papers and reports appear on page 141.

In reviewing the new developments in natural gasoline plants, we may divide the design into the following general features:

1. Gathering and residue return system.
2. Compressor equipment.
3. Absorption, distillation and fractionating facilities.
4. Storage and treating equipment.
5. Loading and transportation equipment.
6. Laboratory and miscellaneous.

There has been little new development in the gathering and residue return systems. Generally, the gasoline plants fall heir to all the second-hand pipe available from other divisions of an integrated company and economy in design rests largely in bargaining for pipe prices. The use of light weight pipe is increasing, particularly in the larger sizes. Normally, it is difficult to design a logical gathering system as the plant is put in at the early stages of field development and the system is extended to meet subsequent requirements.

However, there appears to be an opportunity to apply more reasoning to the relation between the cost of the gathering and return system, the pressure at which the plant will operate and the cost of the absorption and distillation equipment. Most plants are being designed for an operating pressure of 30 pounds per square inch, which appears to be more a matter of precedent than logic and is due probably to the past influence of the Saybolt patent.

Metering Gas

No remarkable changes have occurred in methods of metering gas. The orifice meter is essentially what it was several years ago. Companies purchasing casinghead gas are experiencing difficulty in measuring gas on pulsating flows. In studying the measurement of such flows by speeding up the recording charts, apparent discrepancies ranging over wide percentages, either plus or minus, have been observed when compared with the results of computations of gas volume as recorded by meters under normal operation of one revolution of the chart in 24 hours.

Compressor equipment has advanced mainly, in adapting the fuel injector devices to two-cycle engines, giving added power and greater fuel economy. There appears to be no definite trend in the use of four or two-cycle engines; their adaptation being largely one of personal choice. The accepted units for gasoline plant duty have been developed to a high degree of reliability. While the 170 to 200 horsepower units have served admirably in the past, the tendency in the industry in late years has been toward larger plants and these units do not lend themselves to the most economical design. There is room for a larger unit if such a machine can be built with the same degree of reliability, ease of operation, portability, and have the same degree of salvage value when reclaimed. Such units are now being produced by several manufacturers and their development has been watched closely.

The adaptation of centrifugal compressors to gasoline plant service has been considered. Where suitable and economical power is available, these units appear to have an advantage in compressing large volumes of gas.

There appears to be many differences in opinion on driving the auxiliary equipment. Some companies have installed gas engine generators with electric driven auxiliary equipment. Some are using line shafts and belts driven by a gas engine or a steam engine. Some have adapted steam turbine drives. The advantages and disadvantages of each are obvious and no discussion of them in this paper would likely change anyone's opinion as to the most advantageous, for it appears to be largely a matter of personal opinion.

Over the last few years, there has been no general changes in the procedure for extracting gasoline. The charcoal absorption plants have found limited economic placement. The cost of reactivating the charcoal in sulphur bearing gas, the deterioration of the charcoal in the absorbers due to vibration, the fluctuation in residue gas pressure when absorbers are switched to stills, and the wet residue gas have been factors militating against the general adoption of this process.

As a result of the recent turn toward producing oil by well flowing, which necessitates compressing gas to relatively high pressures, the compression gasoline plant has been revised in some fields.

Absorption Type

Probably the greatest advance in natural gasoline plant design has been made in the oil absorption plants, particularly in the absorber, distillation and fractionating equipment. These features of plant design lend themselves to unit manufacture and equipment companies have been largely responsible for the advances made. In using this newer class of equipment there has been some reduction in the total cost of the plant, but the greater advantage has been in the more rapid erection of the plant, and the assurance of performance on the absorber and fractionating equipment.

There has been a general acceptance of bubble type absorbers. It can hardly be said that there is a general acceptance of a method for designing absorbers, but information and studies are rapidly leading toward the solution. Intercoolers in the absorbers are being used where oil temperatures are excessive in the case of a highly saturated oil. With the use of these intercoolers, the oil-gas ratio may be reduced to lower the initial cost of the distillation unit.

If there is any one feature of gasoline plant design more prominent than the acceptance of bubble equipment, it is probably in the general use of a lighter absorption oil. The development of fractionating stills is responsible for this change. The advantage of low molecular weight oils for absorption practice was pointed out years ago. Now there is a general acceptance of an absorption oil boiling between 375 and 500° F. with a molecular weight between 180-200. In addition to the advantages of the light weight oil for absorber practice, there is also the advantage of lower pressure drops in all interchange equipment which materially affects plant operating costs or lowers initial investments.

The modern still is an adaption of bubble tray equipment which has brought further efficiency into plant design by a reduction in steam requirements, and the necessary fractionation between absorption oil and gasoline vapors.

The reflux may be formed from the vapors leaving the still by partial condensation of the vapors or by the introduction of a cooling medium into the top of the column itself, either water or gasoline. To compensate for the drop in temperature of the oil passing through the still, reboilers have been added which reduce the total steam requirements.

Interchangers

The design of interchange equipment has not been altered greatly in the past year or two. The selection of this equipment rests largely in initial cost, required pressure drop for the heat transfer specified and the ease with which parts may be cleaned or replaced.

There has been a general acceptance of the atmospheric type of cooler on condenser, at least in the Mid-Continent. The enclosed coolers do not find favor because of the interruptions in plant operation in order to clean them.

Turbines and centrifugal pumps have been developed for gasoline plant service to almost the exclusion of other types of pumping equipment. Because of the relation of steam rates to back pressures of these turbines normally used for plant service, there appears to be no economy in using the exhaust steam for distilling purposes.

Higher steam pressures have tended toward the adaption of water tube boilers. The semiportable settings for these boilers have generally answered the objection to low salvage value. Water tube boilers are not used universally. Many gasoline plant designers favor the fire tube type in the form of horizontal return tubular sections, the locomotive type and some are using the scotch marine type with good success.

Differing from the practice of only a few years ago, most gasoline plant designs now include a water treating system, at least for boiler feed water. The Zeolite softeners have come into prominent use for this purpose.

Complete Fractionation

The more complete fractionation of natural gasoline is becoming a common practice. The advantage of more complete fractionation will be evident with the adoption for every day use of the new specifications after January 1, 1932. One has only to review the increasing volume of liquefied gas being marketed to

(Continued on Page 151)

*Presented before Natural Gasoline Association of America in Tulsa May 19, 20 and 21.

SALE OF RESIDUE GAS BECOMING FACTOR OF GREATER IMPORTANCE

By D. C. Williams
Continental Oil Co.*

Within the past decade residue gas has changed from a by-product of a gasoline plant utilized only as fuel in operating the plant and developing or operating a lease, to a very important factor in the operations of the plant. Prior to 1920 a very few casinghead gas contracts made any mention of surplus residue gas. A few contracts provided that the surplus residue gas should be the property of the gasoline manufacturer. The method of the industry was to return all of the residue gas required for lease operations and pop the surplus to the air.

The two factors which have had the greatest influence on changing the old custom of wasting surplus residue gas were handling of large volumes of residue gas from the Burbank Field in Osage County and the consumption of large volume of residue gas by the carbon black industry, with the former, no doubt, exerting the greater influence.

The provisions of the Osage regulations make it necessary that either the gas lessee or oil lessee make some disposition of the surplus residue gas. Should the gas be sold off of the gas lease on which it is produced or sold on the lease for certain purposes, then royalty must be paid to the Osage tribe. The regulations also provide for a gathering charge, based on the delivery pressure, which has been paid the gasoline manufacturers. The income received by gas and oil lessees, gasoline manufacturers and the Osage tribe caused the oil industry as a whole to realize that surplus residue gas had a value.

It might be of interest to note that the two gas lessees operating in the Burbank Field have paid royalty to the Osage tribe, during the period from 1921 to 1930, inclusive, on approximately 62,000,000,000 cubic feet of gas, amounting to $1,860,000.

The utilization of large volumes of surplus residue gas by the carbon black industry, which began rapid development at about the time the sale of residue gas in the Burbank Field was at its peak, completely convinced the producer and gasoline manufacturer of the value of residue gas.

Our new N.G.A. contract provides that the gasoline manufacturer will return to the producer all of the residue gas that he is entitled to receive, according to the residue curve, for lease operations and that if there is any surplus the gasoline manufacturer shall have the right to sell same and pay the producer one-half of the net proceeds. For the gasoline manufacturer to receive his share of the revenue from the residue gas it is, therefore, necessary that he exercise the right to sell the surplus residue gas and develop a market for same.

The disposal of residue gas may, therefore, be divided into two problems:

First—The operation of the gasoline plant and operation and development of leases.

Second—Developing a market for any surplus after taking care of the requirements of the first problem.

The first problem is one over which the gasoline manufacturer has no control, with the exception of limiting the producer to the amount of gas to which he

(Continued on Page 118)

*Presented before Natural Gasoline Association of America during meeting in Tulsa May 19, 20 and 21.

Big Part of Gas Bill Represents Tax

Natural Gas Men in Annual Convention Declare Companies Should Take Steps to See That Consumers Are Informed of Facts

By Thomas F. Smiley

MEMPHIS, Tenn., May 16.—"If each consumer is told each time he pays for 1,000 feet of gas what portion is turned over to tax-spending authorities, he immediately will become interested in trying to curtail the amount of money raised in this way," declared Ralph W. Gallagher, vice president of the American Gas Association, before the annual convention of the natural gas department of that organization, held this week in the Hotel Peabody here. Mr. Gallagher, who is president of the East Ohio Gas Co., Cleveland, discussed the subject of taxation in an informal talk dealing with uneconomical competition which the natural gas industry faces.

"Our very existence depends upon our ability to meet uneconomical competition," said Mr. Gallagher. "The barnacles will have to be scraped off the old ship and all excess tonnage in the way of costs thrown overboard. Every detail of cost must be studied and cut to the bone if we are to weather the storm.

"We all know the tremendous pressure brought upon the legislator to lend his support to this and that project. Public spending has become altogether too heavy a burden on private business, which brings us right back to the same old question, 'What are we in private business doing about it?' I hesitate to attempt any suggestions. However, speaking as tax collectors for a considerable portion of the money spent in public business, why should we not help to enlighten these from whom we indirectly collect taxes as to the seriousness of the situation? Should we not try to teach our consumers that taxes paid by the company are not paid by the stockholders but by the consumers? In other words, tell the consumers that when they pay their bills, 10 per cent, or whatever the amount may be, is a tax—an indirect tax. In the past the taking of this money might be likened to the extraction of a tooth from a patient under the influence of an anesthetic. The average consumer has been unconscious of the fact that the gas company is an indirect tax collection agency.

Would Be Interested If He Knew

"The harm that this form of taxation creates is that the consumer, not realizing that he is paying a tax, is little concerned about the way in which it is spent. It seems to me that if each consumer is told each time he pays for 1,000 feet of gas what portion of it is turned over to tax-spending authorities, he immediately will become interested in trying to curtail the amount of money raised in this way. Gas consumers, in my opinion, are as willing to pay their proportion of the cost of carrying on the government as any other body of citizens. They are generally hard pressed to meet the demands that have been created. This situation, however, is not caused by gas consumers to any greater extent than other residents of the taxing district and there is no reason in the world why these consumers should be asked to pay any greater portion of the cost of carrying on the public's business than those who do not consume the gas company's product. The reason they are being burdened is that apparently it is the easiest way to get additional tax money. Why not acquaint these consumers with the facts?"

The convention adopted a resolution commending to all member companies "that they use their best efforts to give publicity and information to their customers in order that these customers may have full knowledge as to what proportion of their gas bills is in fact a tax and not a charge for the product."

Warning Against Municipal Ownership

Another resolution adopted declared it to be the duty of the natural gas industry "to warn the public of the hazards of municipal ownership, its economic fallacies and its inherent inconsistency with the true principles of American citizenship, and further that we pursue diligently and execute energetically a policy of informing the public on all facts surrounding any specific proposal for municipal ownership as well as continue with vigor the policy of giving the public all relevant facts concerning our own industry."

It was declared that many, if not all, the movements for municipal ownership were inspired by temporary conditions adversely affecting the gas industry or were the deliberate design of political groups who urge municipal ownership in order to create political issues for themselves.

The convention opened Monday morning and closed Thursday. Papers and discussions which made up most of the program reflected the marked changes which the natural gas industry is undergoing and revealed the complicated nature of problems which swift expansion has brought in its train. Notwithstanding discouraging business conditions which have prevailed generally, the registration of about 800 exceeded that of the 1930 convention in New Orleans, La. Miss Mary Speer, membership secretary of the natural gas department, estimated the actual attendance, including those who through carelessness failed to register, at 1,000. This evidence of mounting interest is attributed in large measure to the fact that natural gas is becoming a factor in a steadily increasing number of communities as a result of great pipe line systems pushing their way to regions which scarcely five years ago were regarded as beyond the reach of this fuel.

Memphis Knew There Was a Convention

Memphis and its suburbs at no time were allowed to lose sight of the fact that a natural gas convention was being held. At night when folk glanced skyward upon hearing the whirr of an airplane they beheld the legend, in big letters of scarlet, sweeping about the heavens, "Use Natural Gas." The official badges worn by the visiting gas men bore the reminder, "You can do it better with gas." Welcoming signs were displayed in stores and other public places. Keith Clevenger, director of publicity, kept reporters for newspapers and trade publications supplied with facts about the convention as they developed.

Tulsa is named as the city most likely to entertain the natural gas department convention next year, although no final decision has been reached by the time and place committee. According to plans under consideration the convention would take place simultaneously with the International Petroleum Exposition, but it will be necessary to dispose of certain details before any definite announcement can be made.

With the announcement by H. L. Montgomery, manager of the Cities Service Gas Co., Bartlesville, Okla., and vice chairman of the natural gas department, that he will be unable to accept the chairmanship, which regularly goes to the man who has served a year as vice chairman, it will be necessary to choose two new men to fill these offices when the natural gas department meets with the parent body, the American Gas Association, in Atlantic City, N. J., next October. The nominating committee, it was said, had not settled upon the two men to be recommended for the offices and had not conferred with any prospective candidates as to their willingness to serve. Among men mentioned in this connection in gossip about the hotel lobby were T. J. Strickler, Kansas City Gas Co., Kansas City, Mo., and L. K. Langdon, Union Gas & Electric Co., Cincinnati, Ohio.

City Makes Big Saving

In his address of welcome Mayor Watkins Overton referred to the fact that natural gas had been substituted for manufactured gas less than three years ago. In that time the city of Memphis had saved $600,000 through the substitution. The mayor attributed the success which had attended installation of the new fuel to the care and engineering skill with which the changeover had been effected. "Natural gas is going to be an important factor in the development of this region, making it one of the richest industrial districts in the Southland," he said.

In his talk explaining various types of service offered by the American Gas Association Maj. Alexander Forward, managing director of the association, paid a tribute to H. C. Cooper, chairman of the natural gas department: "I tell but the simple truth when I say that Mr. Cooper has contributed an outstanding record of service to the industry, not only during his year as chairman but in all other years," said Major Forward. He referred to the increasingly sound character of natural gas company securities, pointing out that several states in the last few months have made them for the first time legal for savings bank investment. This, he said, was an evidence of the stabilization which has been taking place in the industry.

E. J. Sullivan, safety director of the Arkansas Natural Gas Corp., Shreveport, La., speaking on "Economic Value of Safety in the Industry," said 85 per cent of all industrial mishaps in the natural gas industry are caused by faulty supervision and only 15 per cent to poor physical condition of the property.

Canada to Be Asked to Co-operate

Natural gas fields of Canada will be brought into a plan of conservation outlined by the main technical and research committee, which made its report through H. D. Hancock of Henry L. Doherty & Co., New York. The plan comprehends the efficient and economic utilization of natural gas. A resolution adopted invites Canadian gas producers to join similar interests in the United States, with the co-operation of their governmental bureaus in a united effort to perfect a unified program for the orderly development of gas fields and the handling of natural gas without waste from the well to the consumer.

L. L. Dyer of the Lone Star Gas Co., Dallas, Tex., told of the value of natural gas statistics, and E. N. Watkins of the

(Continued on Page 153)

PAPERS READ BEFORE NATURAL GAS MEETING

The following papers read before the natural gas convention in Memphis will be found in The Oil and Gas Journal as indicated:

"Compression and Transmission of Gas," P. McDonald Biddison, May 14, page 25.

"Drilling Practices in the Mid-Continent," B. M. Nowery, May 14, page 57.

"East Uses Unique Production Methods," Samuel W. Meals, May 14, page 58.

"Testing Large Positive Meters in Field," John C. Diehl, May 14, page 60.

"Surface Conditions Important in Selecting Drilling Site," J. French Robinson, May 14, page 60.

"Gas Production in Mid-Continent Area," Ross M. Stuntz, May 14, page 61.

"Sales Energy Needed in Gas Business," B. H. Gardner, May 14, page 62.

"Origin and Removal of Pipe Line Dust," D. A. Sillers, May 14, page 63.

"Back Pressure Curves Have Many Uses," Max Watson, May 21, page 66.

"Drilling Methods in California Area," L. M. Spencer, May 21, page 36.

PAST PRESIDENTS AMERICAN GAS ASSOCIATION

Left to right, seated: D. D. Barnum, president, Boston Consolidated Gas Co., Boston, Mass.; C. A. Munroe, New York; George B. Cortelyou, president, Consolidated Gas Co. of New York; and H. C. Abell, vice president, Electric Bond & Share Co., New York. Standing: J. B. Klumpp, Philadelphia, Pa.; A. B. Macbeth, president, Southern California Gas Co., Los Angeles, Calif.; B. J. Mullaney, vice president, The Peoples Gas, Light & Coke Co., Chicago, Ill.; and O. H. Fogg, vice president, Consolidated Gas Co. of New York. R. B. Brown, Milwaukee Gas Light Co., Milwaukee, Wis., is the only past president of the association who is not included in this picture.

Drilling Methods in California Area

Improvements in the Construction and Methods of Operation of Rotary Equipment. Rapid Progress in Deep Drilling

By L. M. Spencer
Southern California Gas Co., Los Angeles*

In general, the producing fields of California are anticlinal or domes occurring along some major structural trend or around the borders of the basins. Most of the structures are easily recognized, having relatively steep dips or at least strong topographic evidence of structure.

All of our oil and gas production is from formations within the Tertiary system. Of these the most important are the Etchegoin formation (Pliocene) of the Midway-Sunset Field, the Pico formation (Lower Pliocene) of the Los Angeles Basin and Ventura Avenue fields, the Temblor formation (Miocene) of the Kettleman Hills, the Vaqueros formation (Lower Miocene) of Elwood and the Sespe formation (Oligocene) of many small fields in Ventura County.

The producing zones within the fields are usually rather thick, a condition which makes for long life and a large per acre recovery. In regard to thickness the Ventura Avenue Field has six oil zones and of these the deepest, or Lloyd zone, has a thickness of over 2,600 feet. The Elliott and Oschner zones of Kettleman Hills make up at least 1,400 feet of producing formation and the Santa Fe Springs and Long Beach Fields contain several zones of considerable thickness.

As a general rule most of the California fields have a gas zone above the oil sands or at least there is usually a concentration of gas in the upper portions of oil sands. Typical occurrences are the gas sands above the oil sands in Buena Vista Hills and in Elk Hills where gas is logged for several hundred feet above the oil sands. At Kettleman Hills, there is no distinct gas zone, but the wells on top of structure are very close to being gas wells in that they come in around 100,000,000 cubic feet and 4,000 or 5,000 bbls. of 60 degree gravity, practically water white oil.

In size the producing areas vary from 14,000 acres for Kettleman Hills, to a few hundred acres for some of the smaller structures.

The formations or strata drilled through are usually logged as shales, sands, conglomerates, hard sands and sandstones. Rarely is limestone encountered and then only in questionable thin streaks.

The producing formations are as above, and vary in texture from fine to coarse and from soft, loose sands to those requiring rock bits.

The gas zones are logged as sands and sandy shale, and usually, aside from the danger of blow-outs are drilled without any particular difficulty.

The Buttonwillow gas zone is an exception in that it is a brittle shale with little or no sand, and, although it drills very rapidly, is inclined to cave badly, particularly in the case of fishing jobs.

Drilling Methods

Improvements in the construction and in the methods of the operation of rotary drilling equipment have practically caused the elimination of cable tools for all but shallow work in California. With the discovery of rich deep zones the rotary method has made rapid progress and deep drilling records are common. Our deepest well, the Shell Oil Co.'s No. 1 Williams, is 9,700 feet deep, and the 10,000-foot well is not considered an impossibility.

With the increasing needs of the industry rotary equipment has become larger and stronger and drilling problems have increased accordingly. Design, materials and strength of drilling equipment are carefully studied before a selection is made, but the general practice is about as follows:

Derricks—Some companies favor the 122-foot rig with the 24x24-foot floor, but other have standardized on the 136-foot rig with a 26x26-foot floor. The latter rig allows the traveling block more clearance as it passes the fourble board, also there is more clearance below the crown block. Another advantage is that the larger derrick has more room in

(Continued on Page 126)

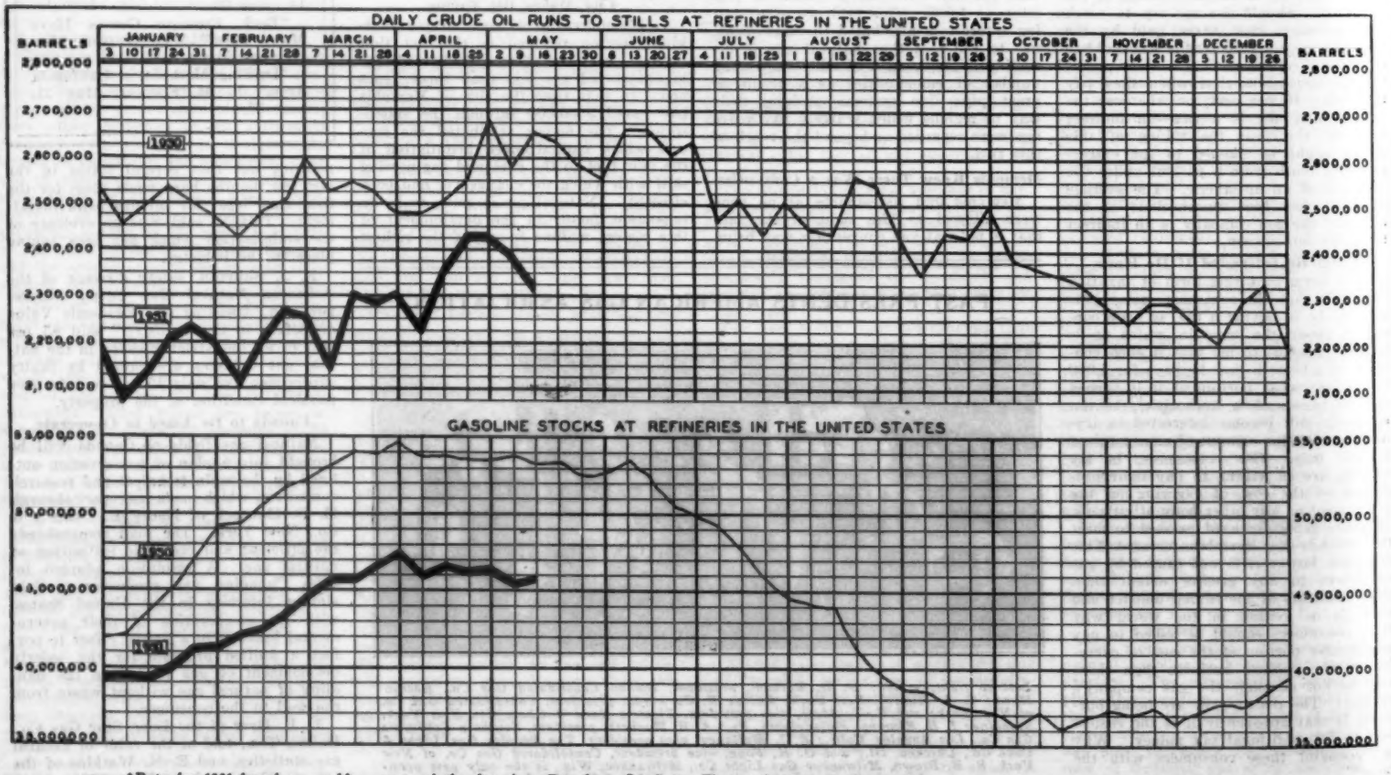
*Before Natural Gas Department, A.G.A., Memphis, Tenn.

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

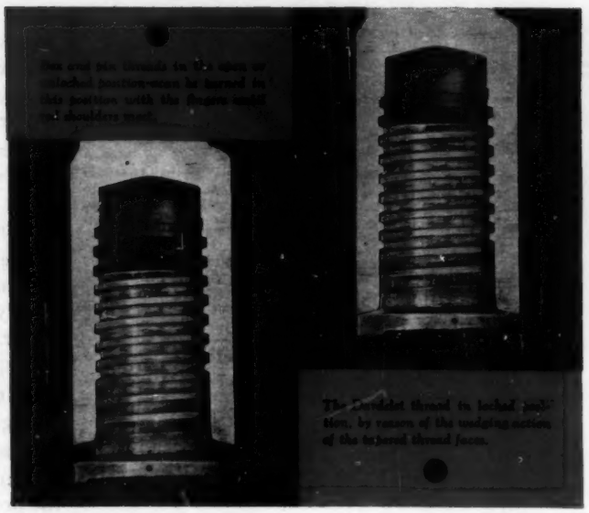
The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to still, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending May 16:

	Week ending May 16				Week ending May 9				Week ending May 17, 1930			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	492,900	8,443,000	8,638,000	100.0	442,100	8,716,000	8,375,000	100 0	470,571	9,090,000	7,048,000
Appalachian	93.8	87,400	1,642,000	1,125,000	93.8	72,100	1,691,000	1,115,000	89 1	95,000	1,783,000	823,000
Indiana, Illinois, Kentucky	97.5	332,300	6,382,000	3,653,000	97.5	336,900	6,317,000	3,622,000	99.5	316,714	8,513,000	3,426,000
Oklahoma, Kansas, Missouri	89.4	274,700	5,676,000	4,064,000	89.4	277,300	5,641,000	4,135,000	89 8	311,432	4,536,000	4,164,000
Texas	91.9	574,000	8,022,000	9,341,000	91.9	539,300	7,716,000	9,219,000	90 8	635,287	7,940,000	10,482,000
Louisiana and Arkansas	98.3	170,600	2,208,000	2,410,000	98.3	162,300	2,304,000	2,385,000	96.8	174,000	2,541,000	1,378,000
Rocky Mountain	93.1	61,100	1,897,000	845,000	93.1	53,300	1,876,000	826,000	93 6	64,000	2,800,000	1,102,000
California	98 8	441,100	13,393,000	95,568,000	98.8	443,100	13,649,000	93,451,000	99 3	578,714	16,117,000	103,081,000
Total United States	95.7	2,434,100	45,663,000	125,644,000	95.7	2,326,400	45,810,000	123,128,000	95.7	2,645,718	53,320,000	137,004,000
Texas Gulf Coast	100.0	429,700	6,867,000	6,629,000	100.0	405,600	6,612,000	6,654,000	100 0	474,000	6,814,000	7,678,000
Louisiana Gulf Coast	100.0	116,300	2,056,000	1,502,000	100.0	114,400	2,155,000	1,407,000	100.0	119,143	2,149,000	1,014,000

(1) Per cent refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



*Data for 1931 based on weekly reports of the American Petroleum Institute. Figures for last week not shown in graph but are included in above tables.



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Here is a scientifically designed locking thread which, by a unique wedging action of tapered thread faces, locks the box and pin into a unit without injury or distortion of the thread. The resultant joint is inseparable in service . . . it holds tight despite the most severe vibrations to which sucker rods are subjected . . . Yet it always yields readily to a sucker rod wrench.

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With each shipment of Dardelet threaded rods, The S. M. Jones Company will deliver a certificate of insurance guaranteeing the payment of thirty dollars ($30.00) for each joint broken while in service. This sum represents the cost of the broken rods and the average expense of recovering the broken string from the oil well.

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COUPLINGS DOMINATE

Joiner Yields 76 Per Cent Gasoline

Large Recovery Obtainable From New East Texas Crude in Skimming and Cracking Operation. Easily Refined

By Gustav Egloff, E. F. Nelson and Paul Truesdell
Universal Oil Products Co.

Oils from the two fields in Rusk County, Texas,—Joiner and Kilgore—and from the Lathrop Field in Gregg County are somewhat similar in their properties.

Joiner crude averages 38 to 39° A.P.I. gravity from an average depth of about 3,600 feet. The producing sand is about 25 feet thick with Austin chalk above the Georgetown lime below.

Joiner crude oil will produce over 75 per cent gasoline by means of topping and use of the cracking process. Cracking tests are run on Joiner crude in experimental apparatus and in a commercial cracking plant. In the former tests the cracked gasoline showed an octane number of about 70. In the commercial plant the octane number was 77.

SERIES ON REFINING

Previous issues of The Oil and Gas Journal in which similar analyses have been published are as follows:

April 30 — "Unrefinable Crudes."
April 16—Mid-Continent.
April 16—Pettus, Texas.
April 16—Kentucky.
April 2—West Texas.
March 5—Oklahoma City.
Feb. 19—Refugio, Texas.
Feb. 12—Pennsylvania Grade.

Analyses of the crudes produced in other domestic fields and in foreign fields will appear in later issues.

An analysis of the crude is reported as follows:

Joiner Crude Oil

A.P.I. grav.	38.9
Per cent sulphur	0.23
Per cent B.s. and water	Trace
Init. b.p. °F.	114

100 c.c. A.S.T.M. Distillation

Pct. distilled over	Temp. °F.
5	148
10	194
20	274
30	354
40	450
50	536
60	620
70	686
80	718
Per cent over	97.0
Per cent at 400° F.	35.5
Per cent at 437° F.	38.0
Per cent at 572° F.	54.0
Coke, per cent (by weight)	2.5

The above crude oil was distilled under atmospheric pressure. Three grades of straightrun gasoline were obtained having endpoints of 384, 401, and 437° F. with corresponding knock ratings of 62, 58 and 50 octane number. Distillation analyses of the three motor fuels are shown in the table.

STRAIGHTRUN GASOLINES

No.—	1	2	3
A.P.I. grav.	63.7	60.4	57.8
Init. b.p. °F.	98	96	104
End b.p. °F.	384	401	437
Pct. distilled over	**Temp. °F.**		
5	125	140	138
10	144	150	158
20	167	180	191
30	188	205	216
40	204	227	239
50	219	246	262
60	237	267	286
70	256	290	315
80	284	318	345
90	320	352	382
95	352	372	406
Loss, per cent	1.5	1.0	0.5

The octane numbers and the number of c.c.'s of Ethyl fluid required to bring the gasolines to Ethyl standard (74 octane) of the three grades of gasolines from Joiner crude oil were as follows:

Octane number	62	58	50
Ethyl fluid c.c. required	1.8	2.6	4.9

Chemical analysis of straightrun gasoline from Joiner crude oil showed it to be paraffinic with a fairly large amount of naphthenes present. The percentages of various hydrocarbon groups in the straightrun gasoline is tabulated below:

Hydrocarbons—	%
Unsaturated	1.0
Aromatic	0.8
Naphthenic	31.4
Paraffinic	66.8

The Joiner crude oil was topped of its 400° F. endpoint gasoline, representing 36.5 per cent of the crude. The topped oil represented 62.4 per cent of the crude, and was used as charging stock for the cracking process. The oil analyzed as follows:

Joiner Topped Crude

A.P.I. grav.	27.6
Init. b.p. °F.	415
Flash (Cleveland) °F.	190
Fire (Open Cup) °F.	240
Flash (Pensky-Marten) °F.	160
Furol visc. at 77° F. sec.	53
Sulphur, per cent	0.39
B.s. and water, per cent	0.2
Coke, per cent	3.4
Cold test °F.	66

100 c.c. A.S.T.M. Distillation

Pct. distilled over	°F.
10	498
20	550
50	703
90	740+
95	740+
Per cent over at 437° F.	1.5
Per cent over at 572° F.	25.0

This Joiner topped crude oil was used as charging stock and processed to produce 400° F. endpoint gasoline, and a fuel oil residuum to meet at least Bunker C specifications. The charging stock was subjected in an experimental plant to 350 pounds operating pressure, and transfer temperature varying between 896 and 923° F.

Operating Conditions for the Six Runs

Run No.—	1	2	3	4	5	6
Pressure (lbs./sq. in.)—						
Reaction chamber	352	352	352	353	353	353
Flash chamber	50	50	50	52	53	53
Temperatures °F.—						
Transfer	896	898	912	915	919	923
Reaction chamber	850	850	861	867	871	875
Vapor to condenser	397	400	402	398	395	391

Products and Yields

Cracking Joiner topped crude yielded from 51.1 to 62.8 per cent of gasoline, and from 48.7 to 31.9 per cent residuum. Gas yield was from 244 to 344 cubic feet per barrel of charge. A summary of products and yields for the six runs is shown in the table:

Run No.—	1	2	3	4	5	6
Gasoline (per cent of charge)	51.1	56.1	60.9	56.1	62.8	60.6
Residuum (per cent of charge)	48.7	41.6	37.5	37.7	31.9	32.4
Gas and loss (per cent of charge)	0.2	2.3	1.6	6.2	5.3	6.0
Gas (cu. ft./bbl. charge)	244	269	311	298	344	327

Cracked Gasoline

The cracked gasolines obtained from Joiner topped crude showed knock ratings varying between 68 and 71 octane number. Distillation analyses are shown in the following table:

Run No.—	1	2	3	4	5	6
A.P.I. grav.	60.2	58.9	58.0	58.7	58.8	59.0
Init. b.p. °F.	92	95	94	89	90	90
Per cent distilled over	**Temp. °F.**					
20	190	190	190	188	192	186
50	288	281	288	283	290	285
90	388	385	387	385	394	385
Endpoint	394	397	402	400	402	396
Octane No.	70	68	69	69	69	71

Residuum

The residuums obtained after cracking Joiner topped crude varied in gravity from 7.4 to 15.6° A.P.I. Analyses of the residuums follow:

Run No.—	1	2	3	4	5	6
A.P.I. grav.	15.6	14.3	8.6	10.4	7.4	7.6
Init. b.p. °F.	479	445	445	444	451	458
Flashpoint (Cleveland Open Cup, °F.)	230	230	230	240	240	210
Firepoint (Cleveland Open Cup, °F.)	310	320	340	335	330	305
Flashpoint (Pensky-Martens)	175	165	180	175	185	190
Cold test, °F.	20	20	30	30	30	35
Per cent B.s. and water	0.6	0.2	0.3	0.3	0.2	0.4
Furol vis. at 122° F. sec.	35	38	107	68	129	118
Per distilled over at 572° F.	8.5	10.0	8.5	9.0	8.0	11.5

Yields Per Barrel of Crude

Products— Run No.—	Per cent of crude					
	1	2	3	4	5	6
Straightrun gasolines	36.5	36.5	36.5	36.5	36.5	36.5
Cracked gasoline	31.9	35.0	38.0	35.0	39.2	37.8
Total gasoline	68.4	71.5	74.5	71.5	75.7	74.3
Residuum	30.4	25.9	23.4	23.5	19.9	20.8
Gas and loss	1.2	2.6	2.1	5.0	4.4	4.9
Gas (cu. ft./bbl. crude)	152	168	194	186	214	204

Cracking of Fuel Oil

A similar crude oil from Joiner Field was subjected to atmospheric and pressure distillation in commercial operation. Atmospheric distillation yielded 37.6 per cent of straightrun gasoline, 5.9 per cent of kerosene, 12.0 per cent of a gas oil, and 43.8 per cent of residuum which was used as charging stock to be subjected to the cracking process. The remaining 0.7 per cent was distillation loss. The properties of these products are described on page 155.

A Joiner cracked gasoline was analyzed for the various groups of hydrocarbons present. The content of paraffins in the cracked motor fuel is less than in the straightrun product while the unsaturated and aromatic hydrocarbons are correspondingly higher. The table shows the percentages of the various hydrocarbons in the cracked gasoline:

Hydrocarbons—	%
Unsaturated	27.1
Aromatic	30.4
Naphthenic	11.2
Paraffinic	31.3

The fuel oil obtained from atmospheric distillation used as charging stock was subjected to the cracking process under 170 pounds pressure. The operating conditions for the commercial cracking run, using the non-residuum type operation, follow:

Cracking stock—	Joiner residuum
Barrels charged	3,099
Hours on stream	48½
Pressure (lbs./sq. in.)	170
Temperatures—	°F.
Furnace	1,429
Transfer	920

The pressure distillate obtained from cracking the Joiner residuum represented 79 per cent of the charge. The pressure distillate showed the following distillation characteristics:

A.P.I. grav.	52.7
Init. b.p.	78
	%
Over at 140° F.	8
Over at 221° F.	25
Over at 284° F.	40
Over at 350° F.	54
Over at 374° F.	60
Over at 400° F.	64
Over at 437° F.	72
Over at 460° F.	76
Over at 500° F.	83
Endpoint, °F.	560

Cracked Gasoline

Fractionation of the above pressure distillate from Joiner residuum yielded 69 per cent gasoline and 28 per cent bottoms with 3 per cent loss.

The cracked gasoline in its knock rating was equivalent to Ethyl standard gasoline to which 0.3 c.c. of tetraethyl lead had been added.

A.P.I. grav.	58.7
Init. b.p., °F.	90
	%
Over at 140° F.	9
Over at 221° F.	36
Over at 284° F.	60
Over at 350° F.	83
Over at 374° F.	89
Over at 400° F.	94
Endpoint, °F.	430

Summary

Summarizing the products obtained by the atmospheric and pressure distillation of Joiner crude oil, as above, the following table shows the percentages of products based on the original crude:

	Pct. of crude	
Straightrun gasoline	37.6	
Cracked gasoline	23.9	
Total gasoline		61.5
Kerosene		5.9
Light gas oil		12.0
Pressure distillate bottoms		9.7
Coke (lbs. per bbl.)	45	
Gas (cu. ft. per bbl.)	485	
Coke, gas, and loss		10.9

When desired, the cracking process may be operated by the "flash residuum method" to produce gasoline, and Bunker C fuel oil. The yield of high antiknock motor fuel will be over 75 per cent with 20 per cent Bunker C, low cold test fuel oil based on the Joiner crude oil.

(Continued on Page 155)

Penberthy Quality

Penberthy Quality is not one of those things that have to be taken on faith.

It stands out plainly enough when Penberthy Products are compared in the stock room with the general run of steam specialties, liquid level gauges, and lubricating devices.

Penberthy Quality, however, is most emphatically demonstrated by the way Penberthy Products stand the gaff of service in the field.

If you are unfamiliar with the real Penberthy performance, specify these products in your next order. They are stocked by all leading supply houses.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886

DETROIT

CANADIAN PLANT WINDSOR, ONT.

Will Inspect Coatings At Spindletop

Dr. Gordon Scott Will Conduct Interesting Tests at "Fitzgerald's Graveyard." Electrical Device Shows Defects Quickly

By L. G. E. Bignell
Petroleum Engineering Editor

Dr. Gordon N. Scott, technical advisor for the A.P.I. Research Committee and active in supervising details of the Co-Operative Corrosion Test now being conducted by pipe line companies, A.P.I. Corrosion Committee and Underground Pipe Protective Institute, announces that as soon as possible after the close of the Dallas, Tex., meeting of the A.P.I. Division of Production, June 3-4, he will proceed to the Gulf Coast to make inspection of pipe lines coated with various protective materials and buried in the Spindletop area.

Doctor Scott has just completed the uncovering and testing of 14 samples along the lines of the Stanolind Pipe Line Co. near Skiatook, Okla., and will next uncover and inspect 48 coatings on short 2-foot by 3-inch nipples as well as sections of pipe lines buried in the extremely corrosive soil in the Spindletop, Texas, area.

The nipples will be subjected to precisely the same electrical and visual tests as have been conducted on other lines and in this work Doctor Scott will be assisted by J. C. Sterling, of the Stanolind Pipe Line Co., Tulsa, who will have charge of the electrical tests on the operating line treatments.

To Test Soil Resistivity

J. M. Johnson, of the Pure Oil Co., is being instructed in the use of instruments and methods used for making these inspections and will assist at Spindletop also.

Frank W. Yeager, of the Barrett Co., will be asked to make a complete and thorough linear and depth survey of the test line right of way, using for this purpose a Shepard's Earth Resistivity Meter, and explain the functions and use of this meter to interested parties.

Doctor Scott will assume complete responsibility for the proper manipulation of the electrical tests, including conductivity of coatings, and the making of pinhole patterns, and will also be responsible for the visual examination of the coatings for the identification of rust, which is being used for the visual criterion of coating failures.

Section of exposed sensitized paper, the dark spots indicating corrosion pits in pipe under coating.

Unique Apparatus to Be Used

The equipment that Doctor Scott and Doctor Logan have developed for the detection of conductivity of coatings is very positive in its action and was used on the Skiatook, Okla., inspection with some rather unusual results.

It consists primarily of coupling into an electric circuit a McCullom earth meter in such a way as to first determine whether the coating being examined has high resistance to the passage of a 4.8-volt current and if the current does register on the ammeter the test will be carried further. No registration indicates perfect protection by coating and no corrosion of pipe line so further test is unnecessary.

The first operation is to lay bare a short section of the pipe that has been covered with protective coating and to this bare section make contact with the anode terminal of the electric system through which the light charge of current is to be passed.

Near this bare spot on the pipe line a longer section of the pipe is cleaned of earth and wrapped with cloths that have been previously wetted in a salt solution with a strength of about 10 per cent sodium chloride.

Wires are wrapped around this wet cover to form the cathode terminal for the circuit and when the 4.8 volt current is turned on from the battery no movement of the needle on the ammeter will be recorded if the coating on the pipe under this wet cloth is offering high resistance.

If the coating has been broken in even a small degree some current will pass through the circuit and be recorded by the ammeter, and the amount of current so recorded indicates the amount of pitting in the pipe and the porosity of the coating.

When current will pass through the coating the next step is to remove the salt solution saturated cloth and cover the section with mud made from any conveniently located earth or clay and water and thin enough to spread freely.

Over this mud mixture is next stretched a special sensitized paper and over this paper the cloth soaked in the salt solution is again applied. The mud fluid is used so that any current applied will have equal chance for passage through all parts of the coating already found porous and will not tend to polarize and all leave the pipe at one point.

Description of Test

In this second set-up a 22½-volt battery is used and the anode terminal of the circuit is again fastened to the original spot made bare for the first part of the test and the cathode terminal leads from the surface of the wet cloth wrapper.

The sensitized paper is not a film such as used in photography, nor is it like blue print paper, but looks more like brown crepe paper. It has been developed by the United States Bureau of Standards and Doctors Logan and Scott adapted it to this test because it is compara-

(Continued on Page 151)

Depth of 10,040 Feet Reached in Drilling Well in California

LOS ANGELES, Calif., May 18.—The Chanslor Canfield Midway Oil Co. broke all existing deep drilling records this week and will undoubtedly establish a new record destined to stand for some time to come. Late Monday night the company had reached a depth of 10,040 feet in No. 2 Rincon, a wildcat located midway between the Ventura Avenue and Rincon Fields of Ventura County. This well has cored considerable oil sand but a production test concluded a short time ago revealed an insufficient amount of natural gas to result in commercial production. This company established a world's record for depth in 1927 when it carried its No. 96 Olinda in the Fullerton Field down to 8,201 feet.

Late Fields

SOUTHWEST TEXAS

SAN ANTONIO, Tex., May 19.—United Gas Co.'s further extension of the Pettus Field to the east was stopped Saturday when No. 38 Ray came in a salt water well at 3,979 feet. Casing was set without making a drill stem test when the well got the sand regular and the

(Continued on Page 156)

MAGNETIC STORM

United States Coast and Geodetic Survey, Tucson, Ariz., magnetic observatory reports that a moderate magnetic storm started at 10 a. m. (C.S.T.) on May 14 and ended at 8 a. m. (C.S.T.) May 15. Their telegrams are as follows:

"Storm began fourteenth. Sixteen. Moderate."

"Storm ended fifteenth. Fourteen."

SCORE SHEET ON OIL PRODUCTION

Below is shown the allotted average daily production in the United States from April 1 to October 1, 1931, suggested by the Oil States Advisory Committee, and the actual daily average production in the week ending May 16:

	Allotted (bbls.)	Actual (bbls.)	Over (bbls.)	Under (bbls.)
Oklahoma	550,000	573,425	23,425	.....
Texas	714,000	885,409	171,409	.....
California	500,000	536,250	36,250	.....
Kansas	110,000	107,480	.....	2,520
Arkansas	50,000	46,755	.....	3,245
Louisiana	65,000	70,957	5,957	.....
New Mexico	40,000	44,131	4,131	.....
Rocky Mountain area	60,000	55,385	.....	4,615
Eastern States	110,000	111,500	1,500	.....
Total	2,199,000	2,431,292	242,672	10,380

Total net average daily overproduction 232,292 bbls.

High Spots in Field News

KANSAS

New producer in Ritz area, McPherson County, rated at 6,632 bbls. New potentials announced.

OKLAHOMA

Four months' proration extension asked without change in State's allowable. Market not above 550,000 bbls.

SOUTHWEST TEXAS

Corpus Christi, Pettus and Laredo district share attention. Real-Kerr County operations are checked by rain.

CALIFORNIA

Kettleman production increasing; new well sending it above 50,000 bbls. daily. Further gain expected shortly.

NORTH LOUISIANA-ARKANSAS

Zwolle east area extended northward. Bossier Parish 60,000,000-foot gas well blows wild. East Texas disappointment.

ROCKY MOUNTAIN AREA

New gas reserve found in Powder Wash structure, Colorado. Hobbs proration continued. New wildcats in Wyoming.

GULF COAST

Mile and half extension at Refugio. New deep sand area at Sweet Lake, Cameron Parish, Louisiana. Hankamer extension.

WEST AND NORTH TEXAS AND PANHANDLE

Interest centers in test southwest of Fort Stockton and wildcat in northwestern Loving County which may open new Delaware Pool. Production in Panhandle increased by new potentials reported. New producing area opened in Young County, Wichita Falls district.

EAST TEXAS

Week's report shows 88 completions, 448 wells drilling and 130 locations made. Lathrop area first to be put under proration. Texas Pacific well between Lathrop and Gladewater estimated over 1,000 bbls. an hour. Kilgore and Lathrop link nearer and Kilgore and Joiner Pools given another link. Smith County wells being watched.

The Tallest Ships were mere playthings of Calm and Storm

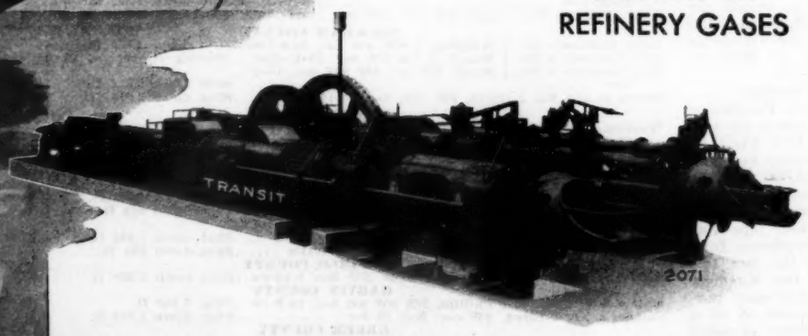
In those days when commerce must wait for a favorable wind, which, so often failed with the voyage half over and left the heavily laden ship to idle for days and sometimes weeks, in a dead calm— trade must sit and twiddle its thumbs until the argosy made port. Time and money losses due to delay were accepted in patient tolerance.

But we are living today in an age that MUST carry on— MUST produce despite all obstacles.

Pumping machinery must be so designed and constructed as to meet Calm and Storm with unswerving constancy. This is especially true for that most particular of all services— pumping hot oil.

Investigate this--

TRANSIT
Gas Engine Driven
HOT OIL PUMP
OPERATING ON
REFINERY GASES



BEAUMONT, TEXAS
E. L. Wilson Hardware Company

SALT LAKE CITY, UTAH
F. C. Richmond Machinery Co.

TULSA and MID-CONTINENT FIELD
Frick-Reid Supply Corporation

NATIONAL TRANSIT PUMP & MACHINE CO.
OIL CITY, PA.

PHOENIX, ARIZ.
Pratt-Gilbert Co.

LOS ANGELES
Republic Supply Company of California

ST. LOUIS, MO.
Reeves & Skinner Machinery Co.

NEW YORK PHILADELPHIA CLEVELAND PITTSBURGH LOS ANGELES HOUSTON TULSA NEW ORLEANS

Ask Four Months Proration Extension

Statewide Committee Recommends No Change in Oklahoma's Allowable. Oklahoma City's Four Zones Recognized

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

The production of Oklahoma shows a substantial reduction for the week ending May 16, over the previous week's gauge. A decline of approximately 34,000 bbls. a day was reported compared to the previous seven days. The daily average for the State was approximately 573,500 bbls. a day compared to 607,200 bbls. for the week ending May 9.

The Oklahoma City Field which made a new peak in production last week was down for the week ending May 16 to approximately 173,500 bbls. a day.

Kessler Oil & Gas Co. of Oklahoma City announced it has acquired a one-fifth interest in the properties of the Westgate Oil Co. in the Oklahoma City Field. The consideration was reported to be around $600,000.

The transaction is subject to ratification by the directors of the Kessler Oil & Gas Co. at a special meeting May 25. It is planned to make F. C. Hall an active officer of the Kessler Oil & Gas Co. giving him charge of production and the land department. F. C. Hall is vice president and general manager of the Westgate Oil Co.

The valuation of the Westgate Oil Co. properties is estimated at approximately $4,000,000 including leases, producing wells, drilling tests, and other lease equipment. The property consists of the Carey lease in N half SE, Section 34-12-3w, on the north edge of the Oklahoma City Field, on which there is one completed well and two others drilling, with two locations. Other properties included are two completed wells and several drilling wells, No. 1 Wilson, No. 1 Kelsey and No. 1 Grace, NW cor. NE NE, Section 10-11-3w, which latter was drilling at 6,000 feet, No. 2 Carey, SE cor. NW SE, Section 34-12-3w, drilling at 6,270 feet, No. 3 Carey, SW cor. SE NW, Section 34-12-3w, drilling at 250 feet, and No. 1 Blevins, SW cor. NW, Section 10-11-3w, was a rig, all being located in the Wilcox sand area of the field.

It is the second transaction between F. C. Hall and Kessler Oil & Gas Co., the first being about a year ago when the Kessler Oil & Gas Co. bought the half interest of F. C. Hall, in the Hall & Briscoe properties in the Oklahoma City Field, and later F. C. Hall organized the Westgate Oil Co.

Stanolind Reduces Takings

The Stanolind Crude Oil Purchasing Co. announced it would reduce its takings from the Oklahoma City Field effective May 16. The company has been handling approximately 55,000 bbls. of crude oil a day and has been one of the largest transporters of crude oil from the field. It is the second pipe line company to reduce its shipments from the capital city field in the last few months, the other being the Magnolia Petroleum Co., which is now only purchasing a few thousand barrels of oil a day. The pipe line shipments exceeded the production in the field during the week ending May 16, the shipments totaling 1,310,022 bbls. and the production 1,229,249 bbls.

Will Curb Townlot Drilling

During the week nearly a score of active drilling operations were affected by an opinion of the Oklahoma State Supreme Court, which upheld the Oklahoma City's municipal ordinance requiring each operator drilling a well inside the city limits to post a $200,000 bond for each well. The opinion upheld Oklahoma County District Court rulings on the bond question. Some of the wells drilling in the city limits were proceeding under a $50,000 supersedeas bond each pending the outcome of appeals to the state supreme court. Some of the tests were shut down making new bonds.

The supreme court's opinion upholding the constitutionality of the Oklahoma City ordinance regulating the drilling of wells inside the city limits is considered another step in the regulation of the oil industry. The ordinance was to protect the people of the city against disaster, from wild wells and will limit the area to be drilled.

Market for 550,000 Bbls.

During the week the statewide proration committee met in Tulsa and after making a survey of the oil production situation were unanimously of the opinion that the effective demand for crude oil for the next four months from June 1 to October 1, would not exceed 550,000 bbls. a day, and recommends that the Oklahoma Corporation Commission, be requested to extend its present orders on that basis.

In order to give greater stability to the commission's orders, the committee recommended that the corporation commission make its next proration order extend over a period of not less than four months from June 1, with the usual flexible provisions to allow recognition of increases and decreases in the demand.

The statewide proration committee with Chairman Alvin Richards, president of Kansas-Oklahoma division of the Mid-Continent Oil and Gas Association; R. M. Young, president of Carter Oil Co.; Wirt Franklin, president of Wirt Franklin Petroleum Corp.; E. J. Nicklos, vice president of Continental Oil Co.; E. R. Filley, manager of Oklahoma division of The Texas Company; J. S. Sidwell, assistant superintendent of the Prairie Oil & Gas Co., and Ray Collins, state proration umpire, recommended that for the present there be no changes in the allowable production from the various pools or areas in the State.

Four Producing Zones

The committee recommends the Oklahoma City Field be considered as a separate area, and indorses the view that the area has been developed to a point where it is evident that there are four different producing horizons which should receive individual treatment so that unfair and inequitable taking of oil from these areas and between said sources may be avoided.

The four areas in the Oklahoma City Field are, the lime area, which was developed first; the lower Simpson sand area, which includes the so-called School Land sand, Johnson sand and Green Shale sand. The north Wilcox sand pool, and the south Wilcox sand pool.

It was suggested due to the differences in the situation and condition of these separate pools in the Oklahoma City area, that the total market outlet should be divided among them in a more equitable manner. The details of the plan are to be worked out by the Oklahoma City operators and be submitted to the Oklahoma Corporation Commission for inclusion in its next order. The committee also recommends that such a separation into distinct pools shall not increase the allowable production from the entire Oklahoma City Pool.

During the week a fire started in a 1,000-bbl. tank by an explosion on a Tom Slick Oil Co. lease in the north end of the Oklahoma City Field, in the southern part of the residential section of the city and spread to all eight tanks in the battery, each containing a quantity of oil, before it was brought under control. The fire burned other tanks on the Phillips Petroleum Co.'s McBeth lease and a house nearby before it was extinguished.

Completions of the Week

During the week the following wells were completed in the Oklahoma City Field: Tom Slick Oil Co.'s No. 5 Classen, S half SW NW, Section 2-11-3w, flowed 315 bbls. of oil in 12 minutes, during which time it cut the connections and was shut in. The oil was found in the Wilcox sand at 6,175-6,361 feet. Indian Territory Illuminating Oil Co.'s No. 2 Terrace Lawn, NE cor. NW NE, Section 10-11-3w, made 1,322 bbls. of oil the first hour and was shut in when it started to cut the connections. The Wilcox sand was found at 6,305-6,415 feet. Tom Slick Oil Co.'s No. 2 Central, SE cor., Section 3-11-3w, made 2,987 bbls. of oil in three hours from the Wilcox sand at 6,225-65 feet and the total depth was 6,530 feet. The gas was estimated at 20,000,000 feet a day.

Anderson and Prichard Oil Corp.'s No. 4 Gibbons, NE cor. SE NE, Section 2-11-3w, in the north end of the Oklahoma City Field, increased its production when opened during the week by flowing 987 bbls. of oil the first hour. When completed it flowed 312 bbls. an hour. The gas increased to 38,000,000 feet a day.

Drilling in the Panhandle

The first operation started by the Saxet Co. since acquiring the natural gas holdings in western Oklahoma and southwestern Kansas of Argus Production Co. and others is the company's No. 1 Gable, C NE Section 24-4-13, Texas County, in the Oklahoma Panhandle. The Saxet Co. acquired the property of the Argus Production Co., Western Production Co. in Texas County, Oklahoma, and in Stevens, Morton, Stanton, Grant and Seward Counties, Kansas.

Prairie Oil & Gas Co. and others' No. 1 Green, NE cor. SW Section 22-22-1, Noble County, in the Otoe Indian district, has cemented off the water at 4,770-4,803 feet. It will test the Layton sand at 3,300 feet, where a showing of oil was found.

Magnolia Petroleum Co.'s No. 2 Sumner, SE cor. NW Section 4-20-1w, Noble County, is a new location in the Waltermire gas field.

Sinclair Oil & Gas Co.'s No. 2 Waltermire, SE cor. SW SE Section 33-21-1w, is shut down after spudding.

Magnolia Petroleum Co.'s No. 1 Roberts, NE cor. SE Section 21-21-2w, Noble County, is being plugged and abandoned at a total depth of 5,273 feet. Same company's No. 1 Hoffman, SW cor. SE SE Section 16-21-2w, was drilling at 3,600 feet, and No. 2 J. Young, SE cor. SW NW Section 22-21-2w, was nearing the pay horizon. It was drilling at 4,700 feet.

Another producer was expected to be added to the Konawa Field. A. J. Diffie and others' No. 1 Caesar, SE cor. NW SE Section 29-6-6, Seminole County, found the top of sand at 2,515 feet and it was oil and gas to a total depth of 2,543 feet. The casing was cemented at 2,508 feet.

In West Chandler Area

In the West Chandler Field in Lincoln County, Magnolia Petroleum Co.'s No. 2 Telford, NW cor. SW SE Section 7-14-4, was being drilled deeper at 4,989 feet. The well was making 4,188 bbls. of oil a day from the Simpson sand at 4,970-84 feet. Same company's No. 1 Telford, SW cor. SE Section 7-14-4, was drilling at 4,700 feet and was expected to reach the pay horizon in a few days.

Magnolia Petroleum Co.'s No. 1 Wagoner, NW cor. NE, Section 18-14-4, in the West Chandler Pool, was completed for 648 bbls. of oil in 24 hours from the Simpson sand at 4,958-68 feet. The well is one of the two most southern producers in the field.

Peters Petroleum Corp. and others' No. 1 Hayes, NW cor. NE NW Section 24-28-3, Kay County, wildcat, was drilling around 3,550 feet. The test found a showing of oil in the Bartlesville sand

(Continued on Page 130)

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Show oil 5,418-30 ft.; fishing.

BECKHAM COUNTY

Price-McFann's No. 1 Webster, C SW SW Sec. 34-8-24w	Shut down 2,275 ft.
Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w	Waiting on cement to set 430 ft.
Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-2-22w	Shut down 2,550 ft.
White et al's No. 1 Green, SW cor. Sec. 34-10-24w	Shut down 3,575 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-19-10w	Shut down 4,665 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w	Shut down 1,115 ft.

COAL COUNTY

McGraw Oil Co.'s No. 1 Ward, NE SE Sec. 35-1-8	Shut down 1,040 ft.
Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8	Shut down 760 ft.

COMANCHE COUNTY

G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 1,450 ft.
J. R. Travis' No. 1 Pickett, NE cor. Sec. 3-1-11w	Shut down 800 ft.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-4w	Shut down 5,850 ft.
Malarnee et al's No. 1 Phillips, NE SW SE Sec. 24-2-2w	Drlg. 1,040 ft.
Skinner's No. 1 Elrod, SW cor. Sec. 13-2-3	Shut down 1,120 ft.

GREER COUNTY

French's No. 1 Murphy, SW NW Sec. 23-7-21w	Shut down 1,645 ft.

HARPER COUNTY

Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w	20,000,000 ft. gas 5,350-5,400 ft.; total depth 8,539 ft.; shut down; sprayed 50 bbls. gasoline.

HASKELL COUNTY

Ault et al's No. 1 Harrison, CWL SE NE Sec. 14-9-19	Shut down 650 ft.
Ault et al's No. 1 Hall, NW SW SW Sec. 14-9-19	Shut down 2,000 ft.
Ault et al's No. 1 Hall, SE NW Sec. 25-9-19	Shut down 200 ft.
Finefield's No. 1 Ogle, NW cor. Sec. 6-7-20	Fishing 600 ft.
Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e	Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE NW Sec. 10-9-18e	Shut down 2,387 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11	Shut down 1,645 ft.

(Continued on Page 128)

A new gasoline standard–

The urge of competition sets it

The motorist insists on it

Dubbs cracking meets it

Knock rating is the measure of gasoline quality The premium gasoline of yesterday is the average of today and the average is going up

Dubbs cracking meets the new gasoline standard

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Extension Well Rated at 6,632 Barrels

New Producer in the Ritz Area in McPherson County One of the Best of Its Chat Wells. New Potentials

By W. A. Spinney
Staff Correspondent, Kansas Fields

Production of crude oil in Kansas continues at approximately the same level. For the week ending May 16, the production averaged approximately 107,500 bbls. a day, a decline of about 800 bbls. a day from the previous seven days.

New Pool in Russell

A new producing area was found in the southern part of Russell County during the week, when a wildcat test found oil in the Oswald lime. J. J. Hall and Stearns-Streeter Co.'s No. 1 Miller, SW cor. SE SE, Section 30-14-13w, swabbed 4 bbls. of oil per hour from the pay at 2,890-2,904 feet. The test was drilled deeper to 2,906 feet, where oil rose 1,100 feet in the hole in two hours. While drilling the test has had seven other showings of oil and gas in shallower formations. The location was made after the acreage had been core drilled. It is located about 2 miles north of the Ochs Pool, which was found by the Empire Oil & Refining Co. in 1929, and is located on the northwest and southeast cross trend through the southern part of the county.

Big Well in Ritz-Canton

One of the largest producing wells in the State was completed in the Ritz-Canton area during the week. George P. Dickey and Shell Petroleum Corp.'s No. 1 Decker, SE cor., Section 35-19-2w, flowed 3,316 bbls. of oil in 12 hours from the chat at 2,935-67 feet. The field umpire rated the well at 6,632 bbls. a day. It extends the producing area in the field a quarter of a mile to the west and is the most northwesterly producing chat well in the Ritz-Canton Field.

E. B. Shawver and others' No. 2 Robbins, NE cor. SW, Section 21-28-1, Sedgwick County, is a new well in the Robbins Pool. A showing of oil was found in the chat at 3,030-33 feet, where it is shut down to pull the big pipe before drilling deeper into the pay. It is the first well to be completed in the pool in several months.

New wells establishing potentials in Ritz-Canton area were Lario Oil & Gas Co. and Shell Petroleum Corp.'s No. 1 Decker, SW cor. SE NE, Section 36-19-2w, making 1,110 bbls. of oil in 12 hours, giving the well a rated potential of 2,220 bbls. in 24 hours, from the Viola lime. E. Corn and others' No. 1 Unruh, SW cor. SE, Section 31-19-1w, was given a potential of 1,670 bbls. a day from the Viola lime at a total depth of 3,425 feet. Reserve Petroleum Corp. and Shell Petroleum Corp.'s No. 1 Ritz, SE cor. SW, Section 31-19-1w, has a potential of 1,820 bbls. a day from the Viola lime. The well made 910 bbls. of oil in 12 hours.

In the northern part of the Decker gas area of McPherson County, Madison and Shell Petroleum Corp.'s No. 1 Russell, C SW SE, Section 1-19-2w, is being abandoned after finding water in the chat at a total of 3,050 feet. It was not drilled to the Viola lime because of a near-by test that was a failure in the deep horizon.

An Extension Well

United Petroleum Co., Stearns-Streeter Co. and others' No. 1 Blair, NW cor., Section 32-19-1w, an extension well in the Ritz-Canton area, was plugged back in the Viola lime and swabbed 175 bbls. of oil in 12 hours. It is the most southeasterly well in the field.

Harris and Haun and others' No. 1 Overman, NW cor. NE SE, Section 20-19-1w, is a new location, offsetting the recent gas well of the United Petroleum Co. and others, which gauged 23,000,000 feet of gas a day. The test is located in the vicinity of four other gas wells with an open flow of 93,000,000 feet a day. Other tests in the vicinity about to be started are: Darby Petroleum Corp.'s No. 2, in the SE cor. SW NE, Section 20-19-1w, and the same company's No. 3, in the SW cor. NE, Section 20-19-1w. The producing gas wells in the area are only a half mile west of the townsite of Canton, and many express the opinion the drilling may extend to the townsite, and develop into a townlot campaign.

In the south end of the Ritz-Canton Field, Helmerich and Payne's No. 2 Koehn, NE cor. SE, Section 12-20-2w, was preparing to land the 6-inch casing in a few days the test was drilling at 2,800 feet.

Jones and Shell Petroleum Corp.'s No. 1 Holmes, NE cor. SE NW, Section 12-20-2w, in the original Ritz Pool area, was preparing to drill deeper into the chat found at 2,960 feet with a showing of oil and gas.

Decker Gas Area

Several tests in the Decker gas area in McPherson County are expected to reach the pay horizon in a few weeks. These tests are also expected to increase the potential gas production of the field. McPherson Oil & Gas Co.'s No. 3 Salthouse, C SE SE, Section 15-19-2w, was coring deeper at 2,895 feet near the chat pay. On the east side of the field, E. K. Carey and others' No. 1 in the C NW SE, Section 13-19-2w, a half mile east of W. C. McBride, Inc.'s No. 1 Lovett, a 13,000,000-foot gas well, was drilling at 2,250 feet. McPherson Oil & Gas Co.'s No. 3 in the C SE NE, Section 11-19-2w, was rotating at 2,600 feet. Same company's No. 2 in the C NW SE, Section 14-19-2w, was drilling deeper in shale at 1,900 feet.

Lario Oil & Gas Co.'s No. 1 Suffield, SE cor., Section 25-19-2w, swabbed 70 bbls. of oil an hour from the Viola at 3,396-3,406 feet and it will be drilled deeper. The well extends production from the deep horizon a half mile southwest.

The wildcat test of the Swaim Oil Co. in Ford County in the western part of the State found a showing of oil and gas and sulphur water in the chat. The test was No. 1 Taylor, C NW, Section 21-25-24w, and the oil and gas showing was found in the chat at 4,985 feet. It was drilled deeper and the top of the Mississippi lime was found at 5,010 feet. The 5-inch casing will be landed at 5,030 feet to shut off the water found in the lime. The owners expect the Wilcox sand between 5,200 and 5,300 feet.

Cowley and Sumner

New operations in Cowley and Sumner Counties were as follows: Tom Fine's No. 2 Boyd, NW cor., Section 32-34-4, Cowley County, is a location. In Sumner County, Tighe and others' No. 1 Thieson, NW cor. SE SE, Section 22-34-2, was preparing to spud. Sumner Oil & Gas Co.'s No. 1 Porter, NE cor. SW, Section 12-33-4w, was rigging up. North of Caldwell, Blackwell Oil & Gas Co.-Carter Oil Co. and others' No. 2 Rex, SE cor. NW SE, Section 22-33-3w, was drilling at 2,250 feet.

Derby Oil Co. and others' No. 1 Goering, SW cor. NW NE, Section 1-23-4w, in the Haury Pool, in Reno County, is being rigged up with standard tools at a total depth of 3,739 feet, which is the top of the Viola lime.

New Potentials Taken

The report of Field Umpire Lloyd R. Pickrell for May 1 of the Ritz-Canton area in McPherson County shows 44 wells producing with a potential of 54,615 bbls. a day, under the unit plan of operation. Since that time several other wells have been completed, increasing the field's potential to better than 64,000 bbls. a day. The umpire advises the field will be allowed to produce 10 per cent of the potential production until such a time as additional completions necessitate a further reduction in the allowable.

The allowed production from April 1 to May 1 was 192,040 bbls. and the pipe line shipments were 190,585 bbls. The allotments for the period took into consideration the overages and shortages for the previous period and were based on the following percentages: April 1 to April 20, 15 per cent; April 20 to April 25, 13½ per cent; April 25 to 28, 12½ per cent, and the last three days of the month, 12 per cent, of the potential production.

Company, lease and well number—	Unit potential daily	Total allowed month	Pipe line runs month
Davis:			
1 Ritz	1,248	9,834	9,367
Derby:			
1 Domsch	1,850	8,136	7,767
Diter et al:			
1 Sellers	960	5,174	4,666
Jones:			
1 Flook	2,092	8,876	8,825
Lario:			
1 Lacuqement	1,556	2,762	2,569
1 and 3 Miller	1,272	5,258	5,284
2 Miller	2,762	11,649	11,548
4 Miller	1,894	8,068	8,133
1 Ritz	640	2,562	2,413
1 A. Ritz	864	3,014	2,892
Shell:			
3 Ritz	...	765	745
Lario:			
1 Wiggers	366	1,202	1,382
Marileen:			
1 and 2 Munn	644	2,550	3,169
McBride:			
1 Whitright	1,510	6,249	6,247
Mid-Kansas:			
1 Garrett	3,888	16,514	16,049
Olson:			
1 Johnson	2,226	10,056	9,726
Palmer:			
1 A. Winn	2,162	9,313	9,008
1 and 2 Ritz	1,111	3,657	3,598
2 Winn	2,770	....	....
1 H. Winn	4,840	8,782	8,481
Reserve:			
1 Ritz	1,148	4,820	4,851
Shell:			
1 Anderson	450	1,922	1,871
1 Holmes	10	....	....
1 Koehn	368	1,524	1,651
1 Lewis	4,092	17,142	17,254
1 Miller	528	2,243	2,723
1 and 2 Ritz	20	793	793
Stanolind:			
1 and 3 Flook	898	3,661	3,596
2 Flook	870	3,618	3,555
Stearns:			
1 Blair	*500	600	591
Texas:			
1 Munn	300	1,277	
2 Munn	700	2,983	
3 Munn	2,266	9,419	22,668
4 and 5 Munn	1,960	8,351	
United:			
1 Smith	1,928	3,103	2,668
Vernon:			
1 Dram	360	559	1,140
Wakefield:			
1 Koehn	1,722	1,449	441
Washoma:			
1 Meeks	1,850	4,154	5,963
Total	54,615	192,040	190,585

*Estimated.

Scattered Wildcats

The wildcat tests in scattered parts of the State were as follows: Stanolind Oil & Gas Co.'s No. 1 Morton, NE cor. SE, Section 3-16-3w, Saline County, landed 10-inch casing at 2,530 feet and was drilling below 2,675 feet.

Aylsward and others' No. 1 Stratman, SE cor. NW SE, Section 1-17-10w, Ellsworth County, wildcat, swabbed 207 bbls. of oil in two hours from the conglomerate at 3,193-3,250 feet. A 5-inch liner was landed at 3,250 feet and the well was drilling deeper at 3,270 feet.

Hersey and others' No. 1 Schultz, C NE, Section 9-14-8w, Ellsworth County, was shut down at 1,925 feet for casing. Milton and others' No. 1 Kasper, SE

(Continued on Page 133)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless marked otherwise)

BARTON COUNTY

Company, farm and location—	Remarks:
Syndicate Oil Co.'s No. 1 Boerts, NW SE SE Sec. 13-18-12w	Drlg. 2,440 ft.
Skelton Oil Co.'s No. 1 Ott, C SE SE Sec. 16-19-14w	Drlg. 2,115 ft.
McCool et al's No. 1 Tsern, NW SE NE Sec. 12-20-11w	Shut down 1,600 ft.

CLAY COUNTY

Crystal Oil et al's No. 1 Tivier, SW cor. Sec. 19-8-2	Shut down 2,500 ft.

COFFEY COUNTY

Heyburg's No. 1 Kroft, SE SW SE Sec. 30-22-14	Shut down 1,300 ft.
Roberts et al's No. 1 Hay, SW SE NW Sec. 32-22-15	Shut down 1,250 ft.

COWLEY COUNTY

Lehman et al's No. 1 Hill, SE NE Sec. 27-33-4	Spudding.
Fisher et al's No. 1 Hurt, C SW SE SE Sec. 11-34-3	Rig.
Roth & Faurot's No. 1 Reedy, SW NW NE Sec. 8-32-3	Shut down 1,040 ft.

DICKINSON COUNTY

Severs et al's No. 1 Lavengood, NE SW Sec. 13-13-2	Shut down 3,850 ft.

ELLSWORTH COUNTY

Gilmore Oil et al's No. 1 Sturm, NW SW Sec. 31-17-9w	Silicious lime 3,243 ft.; drlg. 3,255 ft.
Hershey et al's No. 1 Schultz, C NE Sec. 9-14-8w	Shut down 1,925 ft.
Alyward et al's No. 1 Stratman, SE NW SE Sec. 1-17-10w	Silicious 3,255-71 ft.; 117 bbls. 2 hrs.; shut in; est. 2,000 bbls.; no pipe line connection.
Aladdin Pet.'s No. 1 Stoddenberg, C SW Sec. 22-16-10w	Cleaning out 1,130 ft.
Milton et al's No. 1 Kester, SE NE Sec. 6-14-9w	Drlg. 2,420 ft.

FORD COUNTY

Carter Oil Co.'s No. 1 Everett, C NE Sec. 22-29-21w	Drlg. 3,283 ft.
Swain et al's No. 1 Taylor, C NW Sec. 21-25-24w	Drlg. 4,880 ft.

GRAHAM COUNTY

Schleimeyer et al's No. 1 Clark, SW NE NE Sec. 11-9-25w	Drlg. 4,186 ft.

HARPER COUNTY

Beeler et al's No. 1 Bear, C NE Sec. 21-34-6w	Shut down 1,830 ft.

HARVEY COUNTY

Empire-Shell's No. 1 Showalter, NW SE Sec. 23-23-3w	Silicious 3,525-56 ft.; hole full water; abnd.

KINGMAN COUNTY

Skelly Oil's No. 1 Miles, NE cor. Sec. 30-27-10w	1,635-40 ft. 2,000,000 ft. gas; at 2,005-20 ft. 6,000,000 ft. gas; at 2,123-42 ft. 3,000,000 ft. gas; showing oil 3,385 ft.; T. D. 3,441 ft.; S. D.; estimated at 600 bbls. a day.

LYON COUNTY

Sheedy et al's No. 1 Brown, C W half SE Sec. 10-20-11	Drlg. 550 ft.

MARION COUNTY

Midwell's No. 1 La Master, NW cor. Sec. 31-22-4	Shut down 650 ft.

McPHERSON COUNTY

Henderson & Holden's No. 1 Sommerfield, NE NW Sec. 23-19-1w	Showing 25 bbls. of oil and 50 bbls. of water a day; drlg. 3,561 ft.

MORTON COUNTY

Hydraulic Oil Co.'s No. 1 State Land, NW SE Sec. 32-34-43w	Fishing 5-in. csg. 3,460 ft.

(Continued on Page 128)

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Two Corpus Christi Tests Interesting

Share Attention With Pettus Field and Laredo District. Real-Kerr County Tests Lost Time Because of Rain

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., May 18.—Producers completed the past week were not very numerous and for the most part not very important, but some of the wildcats abandoned as dry were real disappointments. Pettus, Corpus Christi area and Laredo district are still the points mainly of interest since most of the tests in the Real-Kerr County district were shut down and lost several days on account of rain.

A. H. Wray abandoned his No. 1 Burns in northeastern Frio County at 3,716 feet. It was in the Edwards and had a showing of oil and for a time looked as though it had a chance. Its location was important. The only Edwards lime production in Southwest Texas is the three pools around Luling and this is 70 miles west of that. The operators have been working with the well since late in December trying to make a producer out of it but have given it up and quit.

The Houston Oil Co. abandoned its No. 4 Brown Land & Cattle Co. in the Cartwright Field in southeastern Live Oak County at 5,724 feet. It was the third effort to get deep production in that field. Production of gas in that field is obtained at a little below 2,000 feet.

In Goliad County Gibson Oil Co. abandoned its No. 1 Cyrus Parks. Total depth is 5,267 feet but it was plugged back to 4,380 feet but failed to produce anything but salt water. There were several sands and several good showings.

Corpus Christi Area

Two tests in the Corpus Christi area are right where they will tell something interesting within a few days. On the north side of the bay in San Patricio County the Saxet Oil Co.'s No. 4 White Point Development Co. is down 4,953 feet with casing set and about ready to drill in. It is the second effort on the part of the company to get oil production in deep sands in that field. The first effort was No. 17 Rachel and it made a small oil well with quite a lot of gas. No. 4 White Point Development Co. has been having frequent sands with showings of gas and some oil.

Nueces County

On the south side of Nueces Bay in Nueces County Saxet Oil Co.'s No. 8 Dunn is testing a sand at 4,079 feet. It will be remembered that there are three or four producing gas sands at around 2,300-2,500 feet in that field and recently the company deepened No. 6 Dunn and got oil at 4,313 feet and then drilled No. 7 Dunn to 4,296 feet and got oil and No. 8 Dunn is 1,000 feet north of No. 7 Dunn. Also recently in the same field six or eight wells have been completed in another sand at from 4,037-91 feet. This last sand is proven for 5 miles east and west and a half mile wide and if No. 8 Dunn finds this sand productive it will make that horizon proven for a mile in width at the east end.

L. L. Smith's No. 1 Hunter in about the middle of the area east and west but a half mile north of production is below 3,000 feet and another week should put it in the pay horizon. Gulf Coast Oil Co.'s No. 1 Maggie Harrell in about the center of the area is also down pretty well and in another week should be in the sand.

In western Nueces County Houston Oil Co.'s third attempt at deep production in the Agua Dulce Field where gas is produced at 2,000 feet, resulted in No. 1-B Ollie Purl coming in for 40,000,000 feet of wet gas at 4,848 feet, after it had been plugged back from a total depth of 6,010 feet.

Penn Oil Co. and Sun Oil Co. are going to drill another test in the Cooksey unitized pool in eastern Bexar County. No. 1 Cooksey, discovery well of the pool, was brought in last year producing from the Taylor marl. Two other tests were drilled to the Edwards lime. Both were dry in the Edwards but one was plugged back and made a well in the Taylor marl. No. 1 Pollok is being started 1,100 feet southwest of the discovery well.

Miles and miles from any production and a long way from where any wildcat test was ever drilled on the north line of Kendall County 13 miles north of Sisterdale, Fred S. Dibble of Lockhart is starting No. 1 Emil Ellebracht 400 feet from the east line and 800 feet from the south line of Survey No. 77. It is interesting because so far from the beaten path.

Lately the Willie Werner well in Kendall County in approximately the center of the county is trickling a little oil into the creek and causing the farmers to complain. It was practically the first test ever drilled in the county for oil and it resulted in making a small well at about 1,400 feet but has been shut in ever since. Some one recently opened the valve and it has been trickling a little oil ever since.

In the territory north of the Balcones fault including Kendall County it has been quiet for weeks. Most of the tests in the Real-Kerr County district are shut down due to heavy rains. In western Hays County in the area above the fault J. C. Jones has been delayed for several weeks trying to get a string of 8-inch casing to the bottom of the hole at 830 feet to protect the hole so as to drill deeper and test the Pennsylvania and in Guadalupe County on the J. C. Jones and Erwin block of leases C. McGarrity after topping the Edwards at 540 feet in No. 1 Wesch is drilling below 700 feet. According to the operators' estimates it is running plenty high. It is to be a test to the Pennsylvania. This Guadalupe County test is south of the fault.

In Kendall County and north of the fault R. M. Perkins had bad luck with No. 1 Lawhon and quit. The hole was down 600 feet where it stood for nearly a year. Lately when they tried to go back in they lost the hole. The rig was skidded and drilled a second hole 281 feet and has abandoned it but with the rig still standing.

Pettus Area

Featuring the Pettus area the United Production Co.'s No. 38 Ray is drilling in and the Gulf Coast Oil Co.'s No. 2 McKinney 3 miles north of the field tested two sands but did not get much. No. 38 Ray was reported last week as having the sand at 3,974 feet and set casing. This week it is drilling in but has not been reported a producer though it probably will be. It makes a mile eastward extension in a straight line with four tests, No. 38 being 1,000 feet east of the nearest producer.

SOUTHWEST TEXAS PRODUCTION

Agua Dulce	34
Bexar County	321
Branyon	20
Bruner	12,175
Buchanan	90
Chapman	3,912
Dale	283
Darst Creek	18,847
Kingsville	115
Larremore	20
Luling	8,552
Lytton Springs	711
Manford	125
McMullen County	17
Medina County	22
Minerva	404
Mirando district*	13,163
Pettus district	7,404
Saxet	315
Somerset	1,322
Thrall	35
White Point	46
Yoast	190
Total Southwest Texas	68,123
Week ended May 9	67,636
Increase	487

*Includes: Charco-Redondo, Jennings and Mirando Valley, Zapata County; Albercas, Aviator, Carolina-Texas, Mid-O-Juelos, Schott and Wolcott, Webb County; Alworth, Henne-Winch-Fariss and Randado, Jim Hogg County; Cole, Driscoll, Kohler, Schoolfield-O'Byrne and S. R. C.-Vacuum, Duval County; Mount Lucas, Live Oak County.

No. 37 Ray which is a full mile and over to the southeast is below 1,500 feet and making good headway and within another week should be pretty close to the pay.

No. 2 McKinney 3 miles to the north at 3,684 feet had a sand at the right depth to check with the two other producers completed in that area but it tested only 375 pounds. It had another sand at 3,715-27 feet that tested 425 pounds. It seems to have failed to make a well where No. 1 McKinney got 20,000,000 feet of gas and is drilling deeper.

The other test in that part of the country that is of interest, J. M. Davis' No. 1 Ray, a half mile west of the southwest

(Continued on Page 132)

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location—	Remarks:
Tom Draper's No. 1 A. W. Schwarz, 185 ft. E of center of W line	T. D. 695 ft.; drlg.
Pacific Oil & Gas Co.'s No. 1 Harris, G. Van Norman Sur.	T. D. 795 ft.; standing.

BLANCO COUNTY

Hardy-Sitton's No. 1 McMillan	T. D. 796 ft.; drlg.
Liles-Adams et al's No. 1 Stanford, 150 ft. to S line, 1,430 ft. to E line of James Stanford's No. 155	T. D. 970 ft.; fishing.
McCleary et al's No. 1 Schenling, 900 ft. to SE line, 600 ft. to S line of J. A. Rouse No. 118 Sur., 4 miles SW from Blanco City	T. D. 574 ft.; shut down.
J. R. Meek's No. 1 Walker, 360 rds. from W line, 482 rds. from S line of 375-ac. tract in Sur. No. 32	T. D. 1,047 ft.; drlg.
C. Rosenfield's No. 1 Hohenberger, 300 ft. to W line, 1,360 ft. to N line, Sur. No. 94	T. D. 712 ft.; shut down.

BASTROP COUNTY

Smith & Barnes' No. 1 Marberger, 450 ft. W line, 1,360 ft. S line of tract in King & Millet Sur.	Location.
Texas Petroleum Products Co.'s No. 1 J. C. Williams, 2,300 ft. E line, 180 ft. N line of farm, James Doyle Sur.	T. D. 1,997 ft.; bailing; showing oil.

BELL COUNTY

Hartman et al's No. 1 M. E. Reed, Nancy Roberts Sur.	T. D. 907 ft.; showing oil; shut down.
Milden Oil Co.'s No. 1 J. K. Edds, Maxiano Moreno Sur.	T. D. 519 ft.; drlg. shale.
C. O. Alford's No. 1 A. L. Keifer, 150 ft. from S and W lines of tract in Woodford Sur.	Location.
Vilas Oil Co.'s No. 1 B. F. Whittington, 9 miles E of Holland	Moving in rig.

BROOKS COUNTY

Ike Howeth's No. 1 Singer, 400 ft. E of Humble's No. 1 Singer	Rigging up.
The Texas Company's No. 1 Allen, San Antonita grant	T. D. 850 ft.; drlg.

BEE COUNTY

Alexander et al's No. 1 McFall, 3 miles south Skidmore	T. D. 1,206 ft.; shut down.
Grobin & Woods' No. 1 Riggs, 4,800 ft. to E line, 200 ft. to N line of Jas. Nowland Sur., 6 miles W of Skidmore	Rigging up.

(Continued on Page 127)

SOUTHWEST TEXAS PROVEN AREAS

COOKSEY POOL—BEXAR COUNTY

Company, farm and location—	Remarks:
Penn Oil Co.-Cun Oil Co.'s No. 1 Pollok, 1,100 ft. SW of No. 1 Cooksey in John W. Raill Sur.	Spudded in.

DOBROWOLSKI POOL—BEXAR COUNTY

Morgan Bros.' No. 3 Masterson, 300 ft. S of No. 2 Masterson, Miguel Gortaris Sur.	T. D. 550 ft.; set csg.
Collins and Morris' No. 10 Halberdier, J. M. F. Perez Sur.	T. D. 410 ft.; drlg.
Boling & Michael's No. 1 Adams, Miguel Gortaris Sur.	T. D. 700 ft.; (W.O.).
Gatlin Oil Co.'s No. 7 I. A. Beck, 150 ft. SW line, 1,351 ft. SE line of tract, Montes Sur.	Location.
Patton & Yocum's No. 1 T. Strunk, 1,351 ft. from SE line, 150 ft. from NE line of tract	T. D. 675 ft.; drlg.
W. S. Rogers et al's No. 1 L. Donnop, Juan Montes Sur.	T. D. 400 ft.; shut down.
A. J. Swearingen's No. 6 Sandemer, 600 ft. S of No. 1, M. Manchaca Sur.	Location.
A. J. Swearingen's No. 7 Sandemer, 300 ft. S of No. 6, M. Manchaca Sur.	Location.

BRUNER POOL—CALDWELL COUNTY

Joe Bruner's No. 1 Malone, A. Floyd Sur.	T. D. 50 ft.; drlg.

EDDINGTON POOL—FALLS COUNTY

Eddington et al's No. 3 Llewellyn, George Allen Sur.	T. D. 1,070 ft.; drlg. shale.

DARST CREEK FIELD—GUADALUPE COUNTY

Magnolia Pet. Co.'s No. 8 M. T. Klein, 300 ft. SE of No. 1	T. D. 1,600 ft.; drlg.

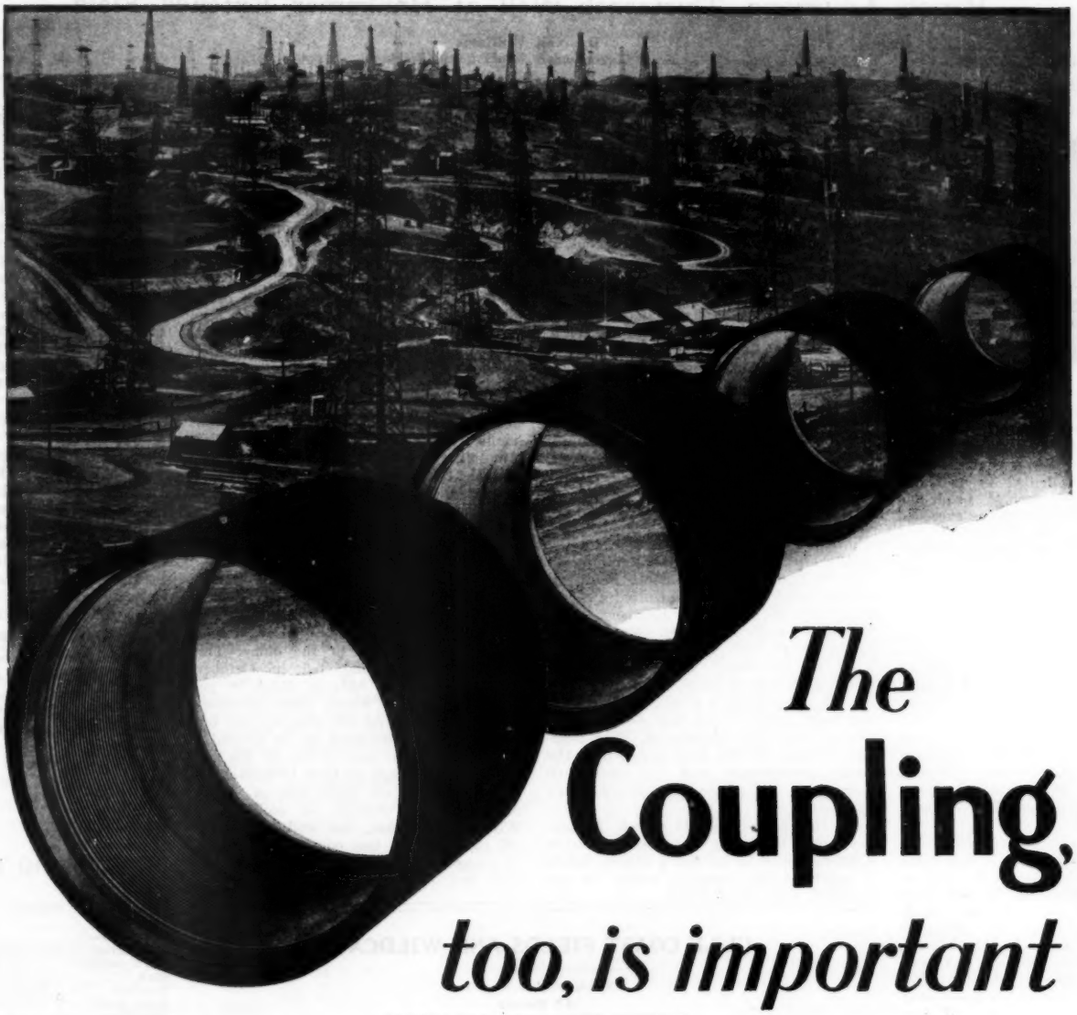
CHAPMAN POOL—WILLIAMSON COUNTY

Chapman et al's No. 2 Lawrence, S. Miller Sur.	T. D. 1,916 ft.; set 6⅝-in. csg.; waiting on cement.
Ertel et al's No. 9 J. C. Abbott, 842 ft. from W and 150 ft. from S line of farm in S. Miller Sur.	T. D. 150 ft.; drlg.
Vitex Oil Co.'s No. 8 Kilgore, Simon Miller Sur.	T. D. 1,735 ft.; waiting on cement.

PETTUS AREA—BEE COUNTY

J. M. Davis et al's No. 1 Ray, 330 ft. from N and E lines of John W. Williamson Sur.	Rigging up.
J. L. Mauldin's No. 1 fee, 1,300 ft. N of S line, 150 ft. E of Medio Creek, Kerr Sur.	T. D. 3,362 ft.; standing.
Gulf Coast Oil Co.'s No. 2 McKinney, 2,400 ft. to E and 150 ft. to S line of tract	T. D. 3,727 ft.; drlg.
United Prod. Co.'s No. 32 Ray, G. Habermacher Sur.	T. D. 3,925 ft.; drlg.

(Continued on Page 127)



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Mile and Half Extension at Refugio

New Deep Sand Producing Area Opened at Sweet Lake, Cameron Parish, Louisiana. Thirteenth Well at Hankamer Extends Field

By Nell Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., May 18.—The successful completion by Pure Oil Co. of its No. 10 Yount Lee Oil Co., Sweet Lake, Cameron Parish, Louisiana, has opened a new deep producing sand in that field. This and a 1½-mile extension of the Refugio area in the lower coastal country comprised the chief developments on the Gulf Coast the past week. A 500-foot extension to the north also was made at Hankamer, southern Liberty County, in that field's thirteenth consecutive completion without a failure.

The new sand at Sweet Lake, topped at 7,366 feet and drilled in to 7,387 feet, is the second deepest producing horizon on the Gulf Coast, being exceeded only by Yount Lee Oil Co.'s 7,400-foot sand southeast of the old Jennings Field, where three wells have been completed with depths ranging up to 7,407 feet.

As the test has not drilled through the sand, the thickness of the sand body has not been determined. In it 25 feet of 4-inch screen was set, and in the first 24 hours the well flowed 1,217 bbls. of pipe line oil through a three-eighths-inch choke, pressures being 900 pounds on casing and 650 pounds on tubing. Corrected gravity of the oil is 28.5° and temperature of the well is 104°, the high temperature being due to the depth and not to salt water. While cleaning itself on open line the well flowed at the rate of 4,200 bbls. daily.

This well was completed early in March from sand at 6,805-30 feet, at that time the deepest sand in the field, and in which one other well, No. 9, had been completed at 6,813 feet. In that sand, No. 10 flowed 214 bbls. net oil with about 25 per cent water in the first 11 hours, but failed to hold up and was deepened to the present depth. The failure of No. 10 to make a successful completion in the 6,800-foot sand was somewhat of a disappointment in view of the record of No. 9, only 700 feet north, which has made the best well in Sweet Lake's history. That well was completed last August flowing 1,357 bbls. of pipe line oil in the first 24 hours and until the past month when salt water began showing up it had maintained a consistent flow of between 1,100 and 1,200 bbls. daily. With salt water coming in, the well was cut back and has been flowing between 750 and 800 bbls. net oil with about 7 per cent water.

Sweet Lake, which is operated exclusively by Pure Oil Co., has been a field of deep production. The discovery well, No. 3, brought in October, 1926, was in sand at a total depth of 5,897 feet, and at that time it was the deepest well on the Gulf Coast. The shallowest sands found productive were at 4,475 and 4,594 feet in two different wells and these never were commercial producers and after being deepened were abandoned. The next shallowest was at 5,060 feet. Including No. 10, seven wells have been completed, although Nos. 9 and 10 are the only ones producing at this time. Of particular interest is the fact that although all wells have been deep none has gone out of the Miocene leaving it possible for the proving of deeper sands in the Oligocene, the main producing section on many fields of the Texas Coast.

Extension at Refugio

Production of the Refugio area was extended 1½ miles north by United Production Corp.'s No. 1-A W. J. Fox, located in the L. Brown Survey. This wildcat, with 18¼ feet of screen at 5,886 feet, came in flowing 28 bbls. of pipe line oil hourly through quarter-inch chokes, 800 pounds back pressure.

Although only 1½ miles north of the nearest production, the well is 3½ miles northeast of the edge of the main Refugio Field. The nearest production is what is known as the Lambert Pool, in which three wells have been completed but these, are located some 2 miles northeast of the Refugio Field proper and so far have been isolated from the main field. The horizon is the same as that in the Lambert Pool and is one which is not productive so far in the main Refugio Field and it is probable an entirely separate major field may be proved between the Lambert wells and the Fox wildcat. Deep dry holes to the east, south and west of the Lambert wells indicate that may be the southern end. No tests have been drilled to the north except the new well. However, most of the intervening acreage is held by the United Production Corp. and as fee ownership is in large tracts, development will be limited. The Lambert Pool was opened early in 1930 by United Production Co.'s No. 1 M. F. Lambert. Since two other wells have been completed by Houston Oil Co. on its Rose Lambert lease to the west. United Production Corp., then known as the Union Producing Co., completed a fourth well but being very small it was not deemed commercial and was abandoned. Five additional tests, all dry, have constituted the entire development and the area until now has not been considered very promising.

In the main Refugio Field, Moody-Seagraves Producing Co. added another 6,400-foot well in its No. 1 Shelly, Block 4, north of the townsite, which, in the sand at 6,450-54 feet, flowed 102 bbls. of pipe line oil on a quarter-inch choke. United Production Corp.'s No. 6 A. W. J. Heard, in the old 3,700-foot sand area, came in flowing 24 bbls. net oil daily at 3,665-72 feet.

Hankamer's Thirteenth

At Hankamer, southern Liberty County, Gulf Production Co. completed its thirteenth producer, No. 13 Boyt, flowing initially at the rate of 1,500 bbls. daily of pipe line oil on a half-inch choke from sand at a total depth of 3,816 feet. The flow, however, has been cut back to field allowances. The well is 500 feet north of previous production there. A location has been made for No. 14 Boyt, also 500 feet north of the previous northern end of the field and 500 feet west of No. 13. Gulf has set an enviable record at Hankamer with no failures. Three deep dry holes have been drilled at Hankamer but these have been flank sand wildcats and a substantial distance from the field. The field has been developed with a view toward repressuring.

Iberville Parish

Production of Shell Petroleum Corp.'s dome at White Castle, Iberville Parish, received an unexpected large boost the past week by this company's No. 3 Wilbert, discovery well of the dome. This well, originally completed in October, 1929, flowing 515 bbls. of fluid, 90 per cent water, and which later increased to between 300 and 400 bbls. net oil, but which recently dropped up to around 5 bbls. net oil, was put on the air lift and suddenly increased its flow to around 2,000 bbls. net oil with lots of water daily, flowing through an inch choke. With this showing, the well was taken off the lift and has continued to flow, at present making slightly less than 750 bbls. net oil daily with around 2,700 bbls. of water, 430 pounds tubing pressure.

The showing made by this well has indicated prolific production possibilities of the White Castle Dome. A second well, No. 4 Wilbert, was completed in May, 1930, flowing 825 bbls. daily and at present is flowing above 980 bbls. daily, 593 pounds pressure. Drilling at this dome has been suspended since February, this year, following the abandonment of No. 5 Wilbert.

At Vinton

At Vinton, Vinton Petroleum Co. completed its No. 11 Matilda Gray, north end of the field, flowing 125 bbls. of fluid, 7 per cent b.s. and water, from sand at 3,467 feet, 15 feet of screen being set.

Abandonments during the week included Rycade Oil Corp.'s No. 2 Seaburn, Stratton Ridge, Brazoria County, quit in heaving shale at 7,624 feet, and Lew Wentz's No. 1 Long Bell Lumber Co., James Seals Survey, Tyler County, dry in sand and shale at 4,205 feet. The former was the second deep test drilled on a geophysical block east of the old Stratton Ridge Dome. Instrument findings indicated either a second dome there or an extension of the old dome.

Daily Average Production

Production of Coastal fields for the week ended May 16 indicated a slight increase. A decrease was reflected in Texas Coastal fields but this was offset by gains in southern Louisiana. Figures for the week were:

TEXAS COAST

Allen	7
Barbers Hill	30,502
Batson	1,008
Big Creek	2,945
Blue Ridge	1,245
Brenham	64
Boling	854
Clay Creek	2,300
Damon Mound	1,300
DeWalt	11,647
Esperson	2,149
Fannett	460
Goose Creek	4,432
Hankamer	2,365
High Island	340
Hull	6,540
Humble	9,825
Lost Lake	257
Markham	182
Moss Bluff	380
Mykawa	150
Nash	296
North Dayton	632
Orange	1,935
Orchard	965
Pierce Junction	8,340
Port Neches	1,372
Raccoon Bend	8,213
Refugio	31,629
Rockland	8
Saratoga	1,071
Sour Lake	2,101
South Liberty	1,862
Spindletop	9,534
West Columbia	4,155
Total Texas Coast	151,075
Week ended May 9	152,123
Decrease	1,048

LOUISIANA COAST

Anse La Butte	72
Bayou Blue	66
Bayou Boullion	144
Black Bayou	1,553
Edgerly	361
Jennings	676
Hackberry	2,481
Lake Barre	2,327
Lake Pelto	105
Leesville	519
Lockport	8,095
Port Barre	1,665
Sorrento	365
Starks	760
Sulphur	3,010
Sweet Lake	952
Vinton	5,437
White Castle	2,594
Total Louisiana Coast	31,182
Week ended May 9	29,748
Increase	1,434
Total Gulf Coast	182,257
Week ended May 9	181,871
Increase	386

GULF COAST FIELDS AND WILDCATS

Week Ended May 16
All Rotary

BARBERS HILL—CHAMBERS COUNTY

Gulf Production Co.'s No. 1 Wilburn (D.D.), Henry Griffith League, 50 ft. S of C of N line of tract .... Set 24 ft. 3-in. screen 5,290 ft.; pumped salt water; pulling screen.

Humphreys Corp.'s No. 2 E. H. Winfree, west flank, W. D. Smith Sur., 50 ft. from W line and 478 ft. S line 10-acre tract .... Set 198 ft. of 7-in. screen 5,627 ft.; comp. flowing 1,500 bbls., 600 pounds pressure, on ¾-in. choke.

Humphreys Corp.'s No. 5 E. H. Winfree, W. D. Smith Sur., 854 ft. from S line and 50 ft. from W line..... Drlg. hard sand and lime 4,420 ft.

Humphreys Corp.'s No. 6 E. H. Winfree, W. D. Smith Sur., 50 ft. from N line and 50 ft. from W line of tract .... Drlg. shale 1,904 ft.

Humphreys Corp.'s No. 1 Anna Davis, Henry Griffith League, 475 ft. from N line and 71 ft. from E line of Strip 6 .... Drlg. salt 2,972 ft.; top salt 1,400 ft.

Humphreys Corp.'s No. 2 T. S. Fitzgerald, Henry Griffith League, 300 ft. from N line, 65 ft. from E line of tract .... Drlg. salt 1,511 ft.; top of salt 1,413 ft.

Humphreys Corp.'s No. 1 Fitzgerald-Meadows, Henry Griffith league, 50 ft. S and 100 ft. E of NW cor. of tract .... Rigging.

Mills Bennett Production Co.'s No. 1 Gulf-Fisher (workover), Wm. Bloodgood Sur., 50 ft. from SW line and 250 ft. from SE line tract .... Trying to set screen 5,344 ft.

Mills Bennett Production Co.'s No. 4 Gulf-Fisher, Wm. Bloodgood Sur., 300 ft. from W line, 80 ft. from N line tract .... Sand 1,247 ft.; losing returns.

Rio Bravo Oil Co.'s No. 2 Fisher, west flank .... Drlg. hard sandy lime 4,999 ft.

Sinclair Oil & Gas Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. out of S cor. of tract .... Lime rock 3,708 ft.; losing returns.

Sun Oil Co.'s No. 2 Smith, W. D. Smith Sur., 75 ft. from W line, 60 ft. from N line of tract .... Rock 4,035 ft.; drill stem stuck.

Sun Oil Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. from S line, east offset Yount Lee Oil Co.'s No. 3 Winfree .... Drlg. sand and shale 3,059 ft.

Sun Oil Co.'s No. 2 Winfree, W. D. Smith Sur., 450 ft. SE along SW line from NW cor. of tract and 50 ft. NE at right angles .... Drlg. rock 3,604 ft.

The Texas Company's No. 2 Winfree, west flank, W. D. Smith Sur., 264 ft. N. 50 ft. W at right angles out of SE cor. of lease .... Drlg. shale 5,332 ft.

The Texas Company's No. 3 Winfree, west flank, W. D. Smith Sur., 478 ft. N and 50 ft. W at right angles.... Drlg. sand and shale 5,493 ft.

(Continued on Page 129)

East Zwolle Area Extended Northward

Bossier Parish Gets 60,000,000 Gas Well Which Blew Wild for Several Days. East Texas Wildcat Proves Disappointment

By J. R. Crumpton
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., May 18.—The Zwolle east field was extended a half mile north with the completion of The Texas Company's No. 3 Stille, Section 33-8-11, flowing 43 bbls. per hour through a seven-thirty-second inch choke. Zwolle marl was topped at 2,230 feet and chalk at 2,277 feet with a total depth of 2,318 feet. This is the third large producer for this field in as many weeks. The well is a half mile northeast of Sabine Royalties Co.'s No. 1 Hill in Section 5-7-11, which is waiting on standard rig with 2,000 feet of oil in the hole. Another producer for this field was Ohio Oil Co.'s No. 8 Bowman-Hicks, Section 2-7-12, flowing 100 bbls. daily from 2,480 feet. H. H. Alvord, Jr., abandoned his No. 1 Sabine Lumber Co., Section 11-7-12, at 2,463 feet after a test produced salt water with a small show of oil. H. W. Perritt has 2,000 feet of oil in the hole at 2,602 feet on his No. 1 Boring, Section 11-7-12, and is arranging to standardize the well.

In Bossier Parish, H. I. Morgan's No. 13-A Kendrick, Section 22-19-11, blew in through the drill stem, an immense gasser estimated at 60,000,000 feet from 1,737 feet. This immense volume, blowing wild for several days, served to kill other nearby wells and was finally subdued by cementing the drill stem in the hole. The gas from this well, since being shut off, is making its appearance and exit from other wells in the field a mile away, through the Nacatoch sand at the 400-foot level. The derrick will be skidded over and an offset well drilled immediately to relieve the situation. The completion, coming in unexpectedly before casing was set, is the largest gasser to date from the Trinity sand on the southwest flank of the Bellevue shallow field.

Richland Parish registered two more good gassers for the week. The Hope Production Co. completed No. 2 Noble, Section 36-16-5, making 28,296,000 feet of gas from 2,400 feet. The well recorded 895 pounds rock pressure. Southern Carbon Co.'s No. 1 J. O'Neal gauged 45,396,000 feet from 2,429 feet. This area has been very consistent for the last several months, producing from one to two good gas wells each week.

EAST TEXAS

An East Texas wildcat that has been closely watched for the past week was tested Thursday to the disappointment of the operators and a large gathering of scouts and oil men generally, when the Sloan Prospecting Co.'s No. 1 Windham, H. English Survey, in Shelby County, tested salt water with a small show of gas from 2,680 feet. Six-inch casing was set in this well at 2,658 feet after coring 20 feet of likely looking sand, but the test failed to produce the anticipated show of oil so common to tests in this area. However, the sand tested in this well has been identified as the Blossom and the well will be drilled to the Woodbine formation with the hope of making a producer. The same company is drilling at 1,100 feet on their No. 1 Sanford, M. M. Vann Survey. Other tests in Shelby County are Bradley & Kadane's No. 1 Ashberry, arranging to set 10-inch casing at 1,810 feet; E. L. Chapman, drilling at 3,186 feet on No. 1 Pickering Lumber Co., C. E. Henry Survey; and Henry Maulding is changing rigs at 1,610 feet on No. 1 Frost Lumber Co., A. D. Fountain Survey. Seven rigs are active in Shelby County and two others are rigging up.

ARKANSAS

In Harrison County, Elmore & Banner are arranging to test after setting 6⅝-inch casing at 2,797 feet. Sand was cored in this well at 2,804 feet with a good show of gas. The C. E. Murdock test, 4 miles west of Linden in Cass County continues to hold the interest of oil men. This well is being reamed to bottom at 3,850 feet, which would indicate a low check with the outlook for a producer very unlikely. Hindeman & Bell are shut down at 2,316 feet on their No. 1 Merritt, McKinney Survey, in Bowie County, and Lee Timberlake is coring hard sand at 2,995 feet after testing salt water at 2,920 feet in his No. 2 Tidwell, L. M. Rice Survey.

In Union County, Arkansas, Wilson & Chapman made a drill stem test on their No. 1 N. Parker, Section 3-18-13, which showed 36 joints of oil and mud and a good show of gas from 3,561-65 feet. They are arranging to set 6⅝-inch casing at 3,559 feet. These operators are planning an intensive drilling campaign in this area, having made four new locations, all in Section 3-18-13. The Lion Oil Refining Co. is drilling in hard sand with streaks of Red Beds at 3,341 feet on its No. 9-A Hays and the Marine Oil Co. is drilling in Red Beds at 3,475 feet on its No. 2-A Winn estate, Section 11-18-13. The same company is in lime rock at 2,600 feet on its No. 1 Union Saw Mill Co., Section 3-18-13. Several new wildcats, recently begun in Arkansas, are making good progress, one of which, the Kendall Oil Co.'s No. 1 Fullenweider, Rhea & Kitchens, Section 13-17-22, Columbia County, reports 13 feet of oil sand from 489-502 feet. This was passed up however and they are drilling in hard rock at 778 feet.

Smitherman & McDonald are drilling at 1,015 feet on their No. 1 Rogers, Section 17-15-22, Lafayette County, after setting 10-inch surface casing at 100 feet.

In Lincoln County, Lawrence B. Cook, trustee, is drilling in gummy shale at 682 feet on his No. 1 McGhee Planting Co., Section 5-8-7. Two dry holes were reported from Arkansas, the Arkansas-Louisiana Pipe Line Co. abandoning their No. 2 McFaddin, Section 15-9-21, Pope County, at 4,368 feet, and H. H. Givens abandoned his No. 1 Garrett, Section 1-3-19, in Garland County, at 3,756 feet.

Daily Average Runs

The fields showed a net decrease of 250 bbls. in daily pipe line runs for the week. Daily average runs for the several pools were:

NORTH LOUISIANA	
Caddo, light	7,345
Caddo, heavy	2,760
Homer	3,245
Haynesville	5,700
DeSoto-Red River	2,695
Elm Grove	510
Bellevue	570
Cotton Valley	1,850
Urania	4,530
Pleasant Hill	425
Sarepta-Carterville	1,195
Zwolle	8,510
Holly	540
Total North Louisiana	39,775
Total previous week	39,825
Decrease	50
ARKANSAS	
El Dorado	3,630
Smackover, light	4,340
Smackover, heavy	31,520
Stephens	850
Nevada	990
Lisbon	725
Champagnolle	3,000
Bradley	50
Urbana	1,750
Total Arkansas	46,755
Total previous week	46,955
Decrease	200
Total both states	86,530
Total previous week	86,780
Decrease	250

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

BIENVILLE PARISH

Company, farm and location—	Remarks:
Ark.-La. P. L. Co.'s No. 1 Giddens, 560 ft. N, 660 ft. E. SW cor. NW SW Sec. 14-16-10	Moving in rig.
Coyle Bros.' No. 1 Lawhorn, 300 ft. N, 300 ft. E, SW cor. SE NE, Sec. 15-16-8	S.D. 2,854 ft.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C. Sec. 15-22-14	S.D. 2,950 ft.
Flint River Oil Co.'s No. 1 C. L. DeMoss, 200 ft. S and E, NW cor. SE NW, Sec. 22-22-13	Drlg. 1,850 ft.
Dr. W. N. Hankins' No. 1 Newell, 300 ft. S and W, NE cor., Sec. 12-19-11	Coring 650 ft.
D. L. Perkins' No. 1 Ardis & Co., 1,127 ft. N, 198 ft. E, SW cor., Sec. 13-15-11	Derrick.
D. L. Perkins' No. 1 J. W. Glover et al, 560 ft. N and W, SE cor. NE, Sec. 23-15-11	Location.
Rombaugh et al's No. 1 Allison, SW SE, Sec. 10-19-13	Arranging to deepen; T.D. 1,600 ft.

CADDO PARISH

Pelican Nat. Gas Co.'s No. 1 Cooper et al, 1,310 ft. E, 1,064 ft. S, NW cor., Sec. 29-18-14	Coring 2,680 ft.
United Gas Public Service Co.'s No. 1 M. K. Smith, 660 ft. S, 2,640 ft. W, NE cor., Sec. 33-23-16	Rig up.

CALDWELL PARISH

Carter Bell's No. 1 Taylor, 150 ft. S, 150 ft. E, NW cor. NE SE, Sec. 17-14-4	Derrick.
Hudson et al's No. 1 Burton, Sec. 35-12-2e	Coring 2,931 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 26-9-6	S.D.; W.O. 3,097 ft.

CONCORDIA PARISH

United Gas Public Service Co.'s No. 1 Hughes, 660 ft. S. 45° 30" E, 660 ft. N 60° 30" E of NW cor., Sec. 49-8-10	Drlg. 1,119 ft.

DESOTO PARISH

Dupree-Fountain's No. 1 J. M. Nabors, 250 ft. S, 250 ft. W, NE cor. NW, Sec. 5-13-11	Arranging to make D.S. test 2,435 ft.
Keatchie O. & G. Co.'s No. 1 Hallie Smith (was H. E. Weichert's), NE SE, Sec. 31-14-15	S.D. 2,350 ft.
C. D. Neff et al's No. 1 Ramsey, 1,000 ft. W, 400 ft. S. NE cor. SE, Sec. 33-13-16	S.D; W.O.; bit in hole 3,000 ft.
Ben Merritt, tr.'s No. 1 Wallums, NE cor. SW SW, Sec. 29-12-12	Drlg. 1,420 ft.
E. T. Oakes' No. 1 R. H. Bryant et al, 200 ft. N and W, SE cor. NE NW, Sec. 30-13-15	Began May 10; drlg. 50 ft.

NATCHITOCHES PARISH

W. M. Coats' No. 1 Collins, 730 ft. N, 50 ft. E, C, Sec. 28-9-10	T.A. 4,091 ft.
J. W. Cooper et al's No. 1 Cooper, NW SW, Sec. 35-11-10	S.D. 3,156 ft.
Cooper et al's No. 2-A Cooper, C SE SE, Sec. 32-11-10	S.D. 1,518 ft.
C. M. Talley et al's No. 1 C. M. Talley, 1,980 ft. W, 660 ft. S, NE cor. SE, Sec. 29-11-10	Tested dry; S.D. 1,380 ft.

RED RIVER PARISH

La. Oil & Dev. Co.'s No. 2 La. Delta Pecan Co., 2,980 ft. S, 300 ft. E, NW cor., Sec. 27-13-11	Spudded in; S.D. 50 ft.

(Continued on Page 115)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH

Company, farm and location—	Remarks:
H. I. Morgan's No. 13-A Kendrick, 669 ft. E, 330 ft. S, NW cor. SE SE, Sec. 22-19-11	Estimated 35,000,000 ft. gas blowing wild through D.S.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1 Edgar, 1,460 ft. S, 1,900 ft. E, NW cor., Sec. 17-16-16	Temporarily abd.
Calatex O. & G. Co.'s No. 1 McAnn-Alfred, 1,310 ft. S, 970 ft. E, NW cor., Sec. 17-16-16	Location temp. abd.

CADDO PARISH—OIL CITY

Trio Corp.'s No. 1 Levee Board, 212 ft. S, 500 ft. E, NW cor., Sec. 17-20-15	1,220 ft. oil in hole 2,265 ft; W. O.S.R.

CADDO PARISH—PINE ISLAND

Haynes Bros.' No. 2 Spell, 956 ft. W, 200 ft. N, SE cor. SE, Sec. 15-21-15	S.D. 3,962 ft.
J. T. McCormick's No. 1 C. B. Christian, 830 ft. S, 300 ft. W, NE cor. SW, Sec. 27-21-15	Began May 1; set 10-in. 40 ft; S.D. 1,200 ft.
Shreveport Oil Corp.'s No. 2-B Muslow, 1,000 ft. S, 300 ft. E, NW cor., Sec. 32-21-15	Set 4½-in. 2,125 ft.
Simplex Oil Co.'s No. 1 Youree-Glassell, 500 ft. N and E, C, Sec. 13-20-15	Set 10-in. 150 ft; S.D.

MOREHOUSE PARISH

Bahan & Bahan's No. 4 Feazel, 900 ft. W, 330 ft. S, NE cor., Sec. 2-20-4	Location.

OUACHITA PARISH

Jordan Drlg. Co.'s No. 7 Cole, 265 ft. S, 1,459 ft. W, NE cor., Sec. 49, in Sec. 50-18-4	Location.
United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4	Location.

RICHLAND PARISH

Hope Prod. Co.'s No. 2 C. M. Noble Hrs., 2,338 ft. W, 1,980 ft. S, NE cor. SE, Sec. 36-16-5	28,296,000 ft. gas 2,400 ft.
Palmer Corp.'s No. 1 Clement, 3,960 ft. N, 1,320 ft. E, SW cor., Sec. 10-16-6	Drlg. sandy shale 2,230 ft.
Southern Carbon Co.'s No. 1 J. O'Neal, 660 ft. N, 760 ft. E, SW cor., Sec. 36-17-6e	45,396,000 ft. gas 2,429 ft.
Southern Carbon Co.'s No. 2-B Thomason, 1,980 ft. S, 2,080 ft. W, NE cor., Sec. 23-16-6	Reaming to set liner 2,442 ft.
United Carbon Co.'s No. 1 Mann, 1,320 ft. S, 1,921 ft. W, NE cor., Sec. 13-16-5e	Completed May 2; 12,736,000 ft. gas 2,450 ft.
United Carbon Co.'s No. 2 Cooper, 660 ft. N, 3,551 ft. E, SW cor., Sec. 13-16-4	Location.

SABINE PARISH—ZWOLLE

W. M. Coates' No. 1 Williams, NE cor., Sec. 23-7-11	Derrick.
W. M. Coates' No. 1 McNeely, NW cor. NE NW, Sec. 14-7-11	Location.
W. M. Coates' No. 4-A Sabine Lbr. Co., Sec. 1-7-11	Began May 8; set 10-in. 101 ft; drlg. 600 ft.
Hawkins et al's No. 1 Moran, Sec. 1-7-11	S.D. 2,540 ft.
O. A. Gautier et al's No. 1 Mischell, 330 ft. E, 150 ft. N, SW cor. SE NW, Sec. 30-8-12	Drlg. 2,100 ft.

(Continued on Page 128)

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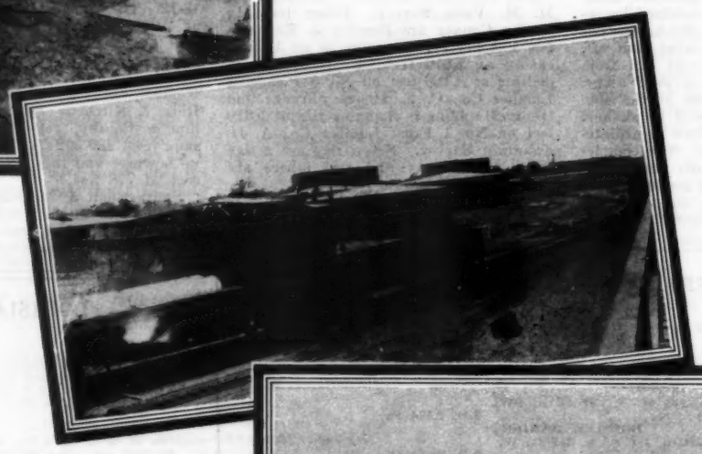

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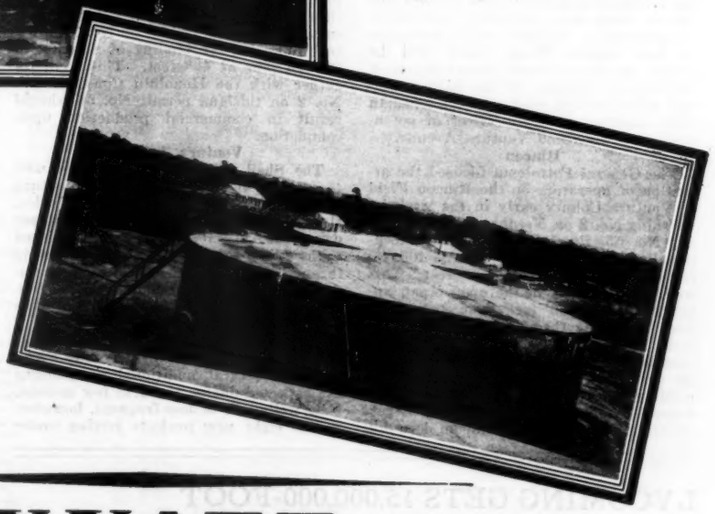

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DALLAS HOUSTON

Kettleman Production Is Increasing

New Well Sends It Above 50,000 Bbls. a Day and Further Gain in Output Is Expected From Frequent Completions

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., May 16.—Completion of a 15,000-bbl. well by the Superior Oil Co. in the North Dome of Kettleman Hills and conclusion of drilling operations on another in the same area featured development work in California during the week. This new well increases production at Kettleman Hills to more than 50,000 bbls. per day and a further gain in production is expected within a few days due to the projected completion of another well. Kettleman Hills has already become the dominating factor which engineers predicted more than a year ago and its influence will become more pronounced as time goes on. The parade of new wells at Kettleman has really only just started as a check indicates the probable completion of perhaps 10 more within 60 or 90 days.

Completions at Kettleman Hills are expected to be frequent during the next 30 days and production will register a substantial increase unless the brakes are applied by mutual consent or by compulsory regulation. Those in touch with the situation recognize the necessity of regulating production because if the output of this prolific field is not curtailed to the maximum it will cause a further demoralization in existing chaotic conditions. It is unlikely, however, that the production of Kettleman will be curtailed except by compulsory regulation resulting from enforcement of the Sharkey Bill. There is absolutely no hope of relief in sight within 30 days so far as Kettleman Hills is concerned and a number of operators are of opinion no definite regulation of production can be expected before July 15.

New Wells Blew In

The Superior Oil Co.'s new well, finished late this week, was No. 2 Huffman, bottomed at 8,320 feet. It actually blew in and, although under perfect control, caused the crew considerable anxiety until it was finally turned into the lease tanks. This well increases the Superior Oil Co.'s production at Kettleman Hills to 25,000 bbls. from two wells. The Standard is next in line with the current daily production of 11,640 bbls., followed by the Petroleum Securities with 11,635 bbls. and the Kettleman North Dome Association with 3,042 bbls. These production figures are subject to an early revision as the Kettleman North Dome Association should finish a new well within a few days and production of the Petroleum Securities will be increased by manipulation of the flow beans to release pressure and a final adjustment effected in the method of handling natural gas production. The Kettleman North Dome Association is rushing construction work on its new gathering system in the North Dome but it does not look as though these facilities will be completed within 15 days. Arrangements have been made to handle the production of its No. 2-1P by one of the pipe line companies.

State production has shown a consistent increase for several weeks and a further gain will be recorded due primarily to development work in the North Dome of Kettleman Hills. During the past two weeks a number of independent refiners have been endeavoring to sign up new crude oil purchase contracts. This move is apparently predicated on the assumption that crude oil production in California will be restricted to absolute requirements by state regulation. This is the hope of major companies also but most of them are restraining their enthusiasm until the reduction is actually effected. The gas conservation law indicated the fallacy of anticipating too much. The movement to tie up crude oil purchase contracts in Los Angeles Basin fields is based on the thought that existing contracts will leave them without sufficient crude when effective curtailment is undertaken. In other words, producers in Los Angeles Basin fields will be obliged to effect a much larger degree of curtailment because of the high potential which will be built up at Kettleman Hills together with the effect of potentials at Elwood and Ventura Avenue.

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	.....	77,405
Fuel oil	.....	.....	.....	.....	.....	71,950
Diesel and gas oil	.....	.....	93,501	13,357	892,230	1,542,044
Gasoline	397,344	56,763	471,034	67,291	5,701,008	6,168,268
Kerosene	.....	.....	.....	.....	41,512	.....
Coastwise—						
Crude oil	629,499	89,928	673,206	96,172	7,950,244	5,834,194
Fuel oil	366,824	52,405	93,692	13,385	5,113,875	6,385,158
Diesel and gas oil	5,320	760	30,769	4,396	571,987	716,490
Gasoline	263,091	37,584	304,546	43,507	4,501,094	3,984,631
Kerosene	14,738	2,105	7,400	1,057	147,041	53,527
Naphtha distillate	.....	.....	.....	.....	4,952	.....
Exports—						
Crude oil	63,097	9,014	133,562	19,122	2,414,812	2,385,331
Fuel oil	302,230	43,219	247,325	35,318	5,409,168	6,790,867
Diesel and gas oil	37,177	5,311	63,994	9,142	1,287,544	1,937,493
Gasoline	132,720	18,960	151,143	21,592	3,563,531	5,667,162
Kerosene	.....	.....	.....	.....	559,229	1,522,476
Lubricants	.....	.....	.....	.....	18,978	10,082

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	88,280
Gasoline	.....	.....	79,915	11,416	267,499	440,188
Lubricants	.....	.....	.....	.....	14,015	2,946
Coastwise—						
Fuel oil	138,810	19,830	88,914	12,702	1,592,398	1,482,805
Diesel and gas oil	.....	.....	.....	.....	88,756	134,403
Gasoline	81,068	11,581	57,996	8,285	1,072,307	1,488,068
Kerosene	.....	.....	12,009	1,716	100,382	106,349
Exports—						
Crude oil	.....	.....	.....	.....	6,010	3,075
Fuel oil	.....	.....	77,412	11,059	396,924	441,559
Diesel and gas oil	.....	.....	.....	.....	232,288	124,540
Gasoline	349,862	49,980	23,255	3,322	1,448,970	1,390,212
Kerosene	7,090	1,013	.....	.....	292,953	241,499

Rincon

The General Petroleum focused the attention of operators on the Rincon Field of Ventura County early in the week by finishing No. 2 on Needham tideland permit No. 55, flowing 890 bbls. of exceptionally clean 29.1 gravity oil and 400,000 feet of natural gas from 3,029 feet. This well, which is out in the open ocean approximately 2,000 feet from the shore line, is flowing through two three-fourth inch beans under a pressure of 160 pounds on the tubing and 400 pounds on the casing. The natural gas produced is yielding a little less than 4 gallons of natural gasoline to each 1,000 feet of gas treated. The General Petroleum does not have a natural gasoline plant in this field but arrangements were completed to utilize the plant of the Chanslor-Canfield Midway Oil Co. No. 2 Needham is structurally higher than wells finished inside the shore line and is consequently expected to register satisfactory sustained production. In addition to completing this new well, the General Petroleum resumed drilling operations on No. 3 Ferguson, following the landing of a string of 20-inch pipe at 408 feet. This well, together with the Honolulu Consolidated's No. 2 on tideland permit No. 56, should result in commercial production upon completion.

Ventura Avenue

The Shell Oil Co. added another well to its list of producers in the Ventura Avenue Field by finishing No. 62 Taylor, flowing 845 bbls. of 31.2 gravity oil per day from 5,663 feet. This well, finished with a 9⁄64-inch oil string, is flowing through an eleven-sixteenths inch bean under a pressure of 300 pounds on the tubing and 650 pounds on the casing. The completion of 10 wells since the first of April has just about concluded development work in the Ventura Avenue Field, although several additional completions are expected during the next few months. New wells will be less frequent, however, as the eight new projects getting under way will require at least five months from spud to completion.

The past week was a rather uneventful one so far as the Elwood Field of Santa Barbara County was concerned, as No. 1 Bishop-Evans of the Barnsdall and Rio Grande, a deep Sespe test, was the only well to record additional footage. In the Capitan Field of Santa Barbara County, however, the Oakburn Oil Co.'s No. 1 on Sperry tideland permit No. 69 continued blowing out and rendered control work very difficult. This well, which blew out May 3 and subsequently wrecked the derrick and equipment, was still flowing 4,000 bbls. of water and about 5,000,000 feet of natural gas late in the week from 2,821 feet. No. 10 Erburu of the General Petroleum is rotating in a red shale characteristic of the Sespe formation at Capitan and the outcome of work will be watched with interest because a fairly good looking oil sand was logged at 2,591 feet. In the Santa Barbara Mesa Field the Palisades Petroleum has spudded in No. 3 Meigs and Charles Starke is rigging up No. 1 Rogers in the same area preparatory to an early test.

The Chanslor-Canfield Midway Oil Co. established a new drilling record for depth late this week when the bit in its No. 2-A east of the Rincon Field of Ventura County reached a depth of 9,852 feet. This well, in wildcat territory about midway between the Rincon and Ventura Avenue Fields, has cored sufficient oil sand to result in commercial production, but there has not been a sufficient amount of gas to result in a natural flow. The principal reason for a continuance of drilling lies in the fact that the company hopes to penetrate a sufficient amount of gas to result in commercial production. It is the present intention to continue drilling as long as practicable with the result that this well may reach the 10,000-foot level within a few weeks. The failure of No. 2-A Rincon of the Chanslor-Canfield Oil Co. to encounter heavy gas pressure has proved a puzzle to those familiar with conditions in the Ventura Avenue and Rincon Fields. Developments during the next few weeks may change the present outlook, which does not look any too hot for commercial production.

Santa Fe Springs

The Union Oil Co. added a new well in the Santa Fe Springs Field by finishing No. 22 Bell, flowing 985 bbls. of relatively clean 32.6 gravity oil from the Nordstrum zone at 5,245 feet. This well failed to result in a natural flow and was put on gas lift. It has been several months since any additional drilling has been undertaken at Santa Fe Springs but this period of dormancy is being broken by the Bellview Oil Syndicate, which has started work on No. 6 Grohs. Development work in the Huntington Beach Field was rather uneventful during the past week and consequently there was no change in the status of the deep zone being tested in that area. W. E. McCaslin has been held up for some time with a fishing job at 7,680 feet and the outlook is rather discouraging especially because core samples indicate almost vertical dips. It is probable this well, No. 17 Transport, is drilling down the fault. The Superior Oil Co., which revealed the possibility of a new deep zone in the Huntington Beach town lot area, should be in a position to throw more light on the potentiality of the deep horizon within the near future as No. 7 Gillette is approaching the 7,000-foot level. The Wilshire Annex Oil Co. has reached a depth of 3,400 feet in its No. 1 Gun Club, a test which is being drilled on acreage quitclaimed by the Associated Oil Co. in the Potrero Field of Los Angeles Basin. The Graham & Loftus Oil Co. has had some excellent oil showings on the ditch

LYCOMING GETS 15,000,000-FOOT GASSER IN TIOGA COUNTY FIELD

By Special Correspondent

CORNING, N. Y., May 16.—Three wells were added to the Tioga and the Wayne-Dundee gas fields in the past week in review, their combined initial production being 24,500,000 feet.

The Lycoming Natural Gas Co.'s No. 1 Hoyt started at 15,000,000 feet. It is located on the northern edge of the present proven Tioga Field in Pennsylvania. The two other wells were in the Wayne-Dundee area. The Belmont Quadrangle Drilling Co.'s No. 1 Millis was good for 1,500,000 feet and the same company's No. 1 Gaspar in the Wayne townsite was estimated at 8,000,000 feet.

The Lycoming company now owns the following producing wells in the Tioga Field: No. 1 Farr, 25,000,000; No. 1 Close, 14,000,000; No. 1 Boom, 25,000,000, and No. 1 Hoyt, 15,000,000, for a total flow of 79,000,000 feet of gas.

The Belmont company now has an available shutin flow of 116,000,000 feet of gas, more than any other company in developments to date. It is their twentieth successful well, while the Lycoming company today brought in its second under the Lycoming name.

Production from the Tioga gas fields will be considerably increased from its present 192,000,000-foot shutin flow before another week is up with the drilling in of Penn-Ohio Gas Co.'s No. 2 Close, Lycoming Gas Co.'s No. 2 Farr, Lycoming Gas Co.'s No. 2 Decker, Lycoming Gas Co.'s No. 1 Price, Lycoming Gas Co.'s No. 1 Ashton, and Allegany Gas Co.'s No. 1 Learn.

in its deep test in the East Coyote Field at 7,450 feet and a core barrel has just been withdrawn, the contents of which should reveal the character and condition of oil sand present.

Lost Hills-Belridge

Kettleman Hills, due to the completion of several prolific producers, has had a tendency to divert attention from the Lost Hills and Belridge Fields of Kern County. Operators interested in these fields, however, are still engaged in development work and have not curtailed operations. It is true recent developments in the North Belridge Field have been distinctly disappointing, but there are several wells under way which should result in commercial production. The failure of the Union to get substantial production in No. 17 Belridge removes the North Belridge Field as a serious threat as this well indicates the existence of a limited productive area. In the Lost Hills Field, the General Petroleum is rotating in No. 1,301 at 2,750 feet. The Getty Oil Co.'s No. 1-A Lincoln Drilling is coring slightly below 4,000 feet in search of a shale body which will permit the landing of another string of pipe. The Universal Consolidated has resumed drilling operations in its No. 49 at Lost Hills but still has another 150 feet of redrilling to finish before reaching bottom at 5,334 feet. No. 17-D, a new well which the Universal will drill in Section 30-26-21, is still a nominal location.

The General Petroleum spudded in No. 27 Heisen, a new well in the Mount Poso Field of Kern County, and is making preparations to put No. 34 on the beam at 1,783 feet. In the Midway-Sunset Field, the General Petroleum is also working on two potential producers in No. 1 Orloff and No. 218 Moco. The Birch Oil Co. has not yet drilled out the cement in No. 2 Maricopa, its deep test in the Maricopa Flats section of Midway-Sunset Field, but this well, bottomed at 9,000 feet, is expected to be given an early test. Drilling operations have been reduced to an absolute minimum in the Round Mountain Field of Kern County with the result there is very little work of interest under way. The Shell is making preparations to conduct a production test on No. 1 Porter Day, a deep well in the Mountain View, or Weed Patch Field of Kern County at 8,419 feet. This well, the first to reveal the existence of commercial production in the Mountain View Field of Kern County, has been carried down in search of deep production as the Shell has been relieved of additional drilling on adjoining properties during the course of this exploration. The Associated has resumed drilling operations in No. 1 Mitchell, a wildcat in the Jacalitos Hills west of Kettleman Hills, and the bit is in a brown shale at 4,575 feet. Exploration work, scheduled to get under way at Blackwell Corners in Kern County a month ago, has been delayed but it is expected one of these prospect holes will be started within 30 days.

The Union Oil Co. has the makings of what looks to be a substantial producer in No. 1 Vidor, an outpost in the extreme eastern part of the Playa Del Rey Field of Los Angeles Basin. A production test to determine the potentiality of No. 1 Vidor is expected to be made within a day or two, although the company has placed thoroughness before speed and consequently it may be several days before the well is actually turned loose. It looks good and will bear watching as it will extend the eastern limits of the Playa Del Rey Field 3,000 feet if present work is successful. The Union is drilling in No. 8 Townsite in Schist at 6,140 feet and indications point to a successful completion, notwithstanding the hard formation penetrated. The Birch Oil Co. successfully finished its No. 2 Venice in the Playa Del Rey Field, flowing 1,040 bbls. of clean 23.4 gravity oil per day from 6,427 feet, the hole having been finished with a 5¾-inch liner carrying 690 feet of perforated. The importance of this well is that it was drilled 352 feet into the Schist prior to the production test. This well, as well as No. 10 Recreation of the Ohio, both drilled into the Schist with successful results. The Pacific Coast Oil Co.'s No. 1 York & Smullin, a wildcat in the Watson area of Los Angeles Basin, failed to hold up on steady production and the company has been obliged to re-enter the hole and wash out the perforations. This wildcat, or outpost as the case may be, as it is only about 1 mile east of the Torrance Field, pumps off in about eight hours, indicating a lack of a substantial accumulation. It will probably require at least one more well to determine the importance of the oil sand encountered in the Pacific Coast Petroleum Co.'s wildcat.

FLORIDA BONUS FOR WELL

TALLAHASSEE, Fla., May 18.—Senate Bill No. 432, introduced by Senator Gomes, proposes reimbursement of the first drillers who bring in a commercial oil well in the State. It was referred to the committee on miscellaneous legislation.

RENEWED DRILLING IN MT. PLEASANT TO FOLLOW EXTENSION AND GAS LINE

By Paul A. Elliott

MUSKEGON, Mich., May 16.—Renewed drilling activity in the vicinity of the proved Mount Pleasant Field is expected to result from two recent developments. One is the discovery of a large new extension of the proved field and the other is the announcement of the construction of a new 40-mile natural gas line from the Broomfield Township gas area to the city of Midland, Mich. Indicative of the development that may be expected as a result is the start of operations on two new wells, one east of the proved oil field near the important new extension well and the other west of the oil pool near other gassers in the Broomfield Township area.

The Gordon Oil Co. has started operations on its No. 2 N. J. Skinner, SE NE NE, Section 16-14n-2w, Greendale Township, Midland County, one location east of the Kalamazoo Improvement Co.'s No. 1 George Hornick, SW NW SW, Section 15-14n-2w, also in Greendale Township. Last reports on the Kalamazoo-Hornick well are that it is making nearly 600 bbls. a day and has been completed at a total depth of 3,650 feet.

Since the announcement that the Consumers Power Co. will lay an 8-inch gas line from Broomfield Township to Midland was made several days ago the Pure Oil Co. has prepared to drill its No. 3 Stanley E. Willie, SE SW, Section 4-14n-6w, Broomfield Township, Isabella County, down to the Marshall gas.

The Broomfield gas area from which a large part of the gas will be obtained for the new line has seven producers and one dry hole. Two of the producers were drilled by the Pure Oil Co., three by the Isabella Oil Development Co., one each by the Rockford Oil & Gas Co. and by the Wittmer Oil & Gas Properties. Potential production of the area is rated at 20,000,000 to 30,000,000 feet from

(Continued on Page 132)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
Olympic Realty Corp., No. 1 Barnes, Los Angeles Co.	14- 2-15	5,174	hd. sd. drilling
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	9- 2-15	5,300	br. sh. drilling
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	6,238	suspended
Mesmer City Corp., No. 1 Mesmer, Los Angeles Co.	24- 2-16	5,550	sd. sh. drilling
Dwyer & Becker, No. 1 Compton, Los Angeles Co.	17- 3-13	4,520	suspended
Allison Synd., No. 1 Baldwin, Los Angeles Co.	8- 2-14	5,110	suspended
Val. Ventura Oil Co., No. 1 Manhattan, Los Angeles Co.	30- 3-14	6,525	suspended
Cal. Ventura Oil Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,396	suspended
Cal. Ventura Oil Co., No. 2 Hermosa, Los Angeles Co.	31- 3-14	3,300	suspended
Cal. Oilfields Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	2,560	suspended
Carniel Oil Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,214	cleaning out
Hermosa Expl. Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,050	sd. sh. drilling
Kellogg, W. R., No. 1 Hermosa, Los Angeles Co.	6- 4-14	2,560	sd. sh. drilling
Westwood Pet., No. 1 Hermosa, Los Angeles Co.	6- 4-14	3,200	testing
Tulsa Oil Co., No. 1 Hermosa, Los Angeles Co.	6- 4-14	3,060	sd. sh. drilling
McMahon & McDonald, No. 1 Watts, Los Angeles Co.	12- 3-14	4,665	suspended
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24- 3-15	780	suspended
Shelley C. M., No. 1 Torrance, Los Angeles Co.	13- 4-14	rig	suspended
Ewert, W. S., No. 1 Watson, Los Angeles Co.	30- 4-13	....	location
York & Smullin, No. 1 Watson, Los Angeles Co.	29- 4-13	3,698	cleaning out
Wilmington Consd., No. 1 Watson, Los Angeles Co.	17- 4-13	1,912	sd. sh. drilling
Mack Oil Co., No. 1 Chatsworth, Los Angeles Co.	6- 2-16	rig	suspended
Brubaker, W. O., No. 1 Van Nuys, Los Angeles Co.	11- 2-15	2,700	suspended
Rucker & Croul, No. 2 Puente, Los Angeles Co.	27- 2-10	2,200	suspended
Arden Oil Co., No. 1 Puente, Los Angeles Co.	15- 2-10	3,325	suspended
D. & B. Oil Co., No. 1 Puente, Los Angeles Co.	3- 2-10	4,620	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2- 9	1,092	suspended
Marcel Pet. Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	3,100	suspended
Cudahy Oil Co., No. 1 Bell, Los Angeles Co.	30- 2-12	1,370	recemented
The Texas Company, No. 1 Montebello, Los Angeles Co.	4- 2-12	3,578	hd. sd. drilling
Huntington Cent. Oil Co., No. 1 Montebello, Los Angeles	34- 1-11	mtl.	building rig
Celito Oil Co., No. 1 Monterey Park, Los Angeles Co.	28- 1-12	5,278	suspended
Hammer, Fred, No. 1 Alhambra, Los Angeles Co.	24- 1-13	3,412	suspended
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	2,280	suspended
Rucker, L. W., No. 1 Calabasas, Los Angeles Co.	26- 1-17	753	sd. sh. drilling
Neal Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Hall, H. L., No. 1 Newport, Orange Co.	30- 6-10	790	suspended
Gesell, T. F., No. 1 Newport, Orange Co.	29- 6-10	1,470	cleaning out
Standard, No. 1 Newport, Orange Co.	26- 6-10	4,650	hd. sd. drilling
Western Gulf, No. 1 Santa Ana, Orange Co.	12- 3- 8	3,267	suspended
The Texas Company, No. 1 Olive, Orange Co.	7- 4- 9	5,391	sd. sh. drilling
Cohen, H., No. 1 Sunset Beach, Orange Co.	20- 5-11	....	location
Gleck Oil Co., No. 1 Sunset Beach, Orange Co.	20- 5-11	3,320	sd. sh. drilling
Western Gulf, No. 1 Santa Ana, Orange Co.	12- 3- 8	3,267	suspended
Beck, F. A., No. 1 Corona, Riverside Co.	8- 4- 6	481	sd. sh. drilling
Beck, F. A., No. 1 Beaumont, Riverside Co.	1- 3- 1	520	sd. sh. drilling
Grey, H. H., No. 1 Redlands, San Bernardino Co.	26- 1- 2	2,392	suspended
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,519	suspended
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	4,966	hd. sd. drilling
South Bay Oil Co., No. 1 Border, San Diego Co.	31-18- 2	....	location
Carr, O. K., No. 1 Capistrano, San Diego Co.	13- 8- 3	5,250	cleaning out

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S-T-R	Depth	Status
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-35	6,490	hd. sd. drilling
Fields Gas Co., No. 1 Santa Maria, Santa Barbara Co.	8- 9-33	5,570	suspended
Barnsdall, No. 1 Gato Ridge, Santa Barbara Co.	9- 8-32	6,510	suspended
Midwest Oil Co., No. 1 Los Alamos, Santa Barbara Co.	2- 7-33	1,800	suspended
Smith, W. E., No. 1 Lompoc, Santa Barbara Co.	18- 7-34	100	tech. spud
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas—shut in
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	4,350	gas—shut in
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	5,183	recemented
General Pet., No. 134 Goleta Santa Barbara Co.	21- 4-28	2,053	suspended
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	2,047	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	2,050	suspended
General Pet., No. 138 Goleta, Santa Barbara Co.	21- 4-28	4,931	suspended
General Pet., No. 139 Goleta, Santa Barbara Co.	21- 4-28	2,051	suspended
General Pet., No. 133 Goleta, Santa Barbara Co.	21- 4-28	2,030	suspended
Boles Oil Co., No. 140 Goleta, Santa Barbara Co.	22- 4-28	1,040	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	2,012	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	1,019	suspended
El Camino, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	1,035	suspended
South. Cal. Drlg. Co., No. 1 Goleta, Santa Barbara Co.	12- 4-29	2,394	sd. sh. drilling
Bolsa Chica, No. 191 Goleta, Santa Barbara Co.	24- 4-29	4,191	testing
Bellview Oil Co., No. 159 Goleta, Santa Barbara Co.	24- 4-29	2,099	suspended
Johnson, George, No. 1-A Goleta, Santa Barbara Co.	19- 4-27	2,970	Beape formn.
Cuyama Oil Corp., No. 1 Cuyama, Santa Barbara Co.	12-10-27	rig	suspended
Hart Pet. Co., No. 1 Cuyama, Santa Barbara Co.	27-10-26	rig	suspended
Sovereign Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	5,500	cleaning out
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
C. C. M. O. Co., No. 2-A Rincon, Ventura Co.	23- 3-24	9,852	sd. sh. drilling
Continental, No. 1 Rincon, Ventura Co.	23- 3-24	3,785	sd. sh. drilling
Puro Oil Co., No. 1 S. P. Canyon, Ventura Co.	15- 4-21	2,591	suspended
Superior Oil Co., No. 1 Sespe, Ventura Co.	14- 4-21	6,700	sd. sh. drilling
Merchants Pet., No. 1 Sespe, Ventura Co.	1- 4-20	1,255	prod. test
Lockwood Valley Oil Co., Well No. 1, Ventura Co.	32- 8-21	1,015	suspended
Magu Synd., No. 1 Oxnard, Ventura Co.	17- 1-21	3,365	hd. sd. drilling
Hansen Pet., No. 1 Conejo, Ventura Co.	24- 1-20	191	sd. drilling
Wilshire Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	7,000	recemented
Kent & McDonald, No. 1 Temblor Hills, Kern Co.	3-32-22	1,672	suspended
Federal Drlg. Co., No. 1 Buena Vista, Kern Co.	20-31-24	5,367	suspended
General Pet., No. 1 Belridge, Kern Co.	30-28-21	4,402	br. sh. drilling
The Texas Company, No. 1 Belridge, Kern Co.	22-27-20	5,045	suspended
Standard, No. 2 Belridge, Kern Co.	31-27-20	5,325	cleaning out
Ohio Oil Co., No. 1 Belridge, Kern Co.	36-27-20	5,980	recemented
Reward Oil Co., No. 1 Belridge, Kern Co.	34-27-20	5,000	cleaning out.
Continental, No. 1 Belridge, Kern Co.	36-27-20	4,540	sd. sh. drilling
Wallace, K. C., No. 1 Belridge, Kern Co.	32-29-21	4,222	cleaning out
Rio Cal. Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	redrilling
Wicker, Sy, No. 1 Arvin, Kern Co.	12-30-28	1,250	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	8,450	cleaning out
Shell, No. 2 Weed Patch, Kern Co.	29-30-29	6,410	suspended
Shell, No. 3 Weed Patch, Kern Co.	32-30-29	5,512	sd. sh. drilling
Osborn, Colter, No. 1 Weed Patch, Kern Co.	15-30-29	2,960	sd. sh. drilling
Mohawk Oil Co., No. 1 Weed Patch, Kern Co.	32-30-29	6,150	wet
Mohawk Oil Co., No. 2 Weed Patch, Kern Co.	4-31-29	rig	suspended
Alpine Oil Co., No. 1 Weed Patch, Kern Co.	13-31-29	3,785	cleaning out
Standard, No. 1 Devils Den, Kern Co.	14-25-18	3,313	cleaning out
Hannah, Tom, No. 1 Devils Den, Kern Co.	25-25-18	2,925	cemented
Cumberland Oil Co., No. 1 Devils Den, Kern Co.	21-26-18	1,590	suspended
Langstroth, F. B., No. 1 Blackwell Corner, Kern Co.	14-26-19	rig	suspended
E. J. Miley, No. 1 Blackwell Corner, Kern Co.	17-26-19	rig	suspended
Shell, No. 1 Semitropic, Kern Co.	17-27-23	9,700	plug 5,619 ft.
Morsn & DeCamp, No. 1 Mojave, Kern Co.	26-10-14	750	suspended
Kendall Dev. Co., No. 1 Mojave, Kern Co.	27-11- 9	496	sd. sh. drilling
Meridan Oil Co., No. 1 Antelope, Kern Co.	11- 9-15	3,804	suspended
Ritchie, J. J., No. 1 Tejon, Kern Co.	33-11-19	5,530	cleaning out
Associated, No. 1 Jacalitos, Fresno Co.	22-21-15	4,585	deepening
Carruthers Oil Co., No. 1 Fresno Co.	4-17-20	rig	suspended
Miracle Oil Co., No. 1 Cuyama, San Luis Obispo Co.	17-10-25	314	suspended
Panorama Oil Co., No. 1 Cariszo, San Luis Obispo Co.	7-31-21	4,019	redrilling
Tray El Oil Co., No. 1 Cariszo, San Luis Obispo Co.	7-32-22	1,437	cleaning out
Cities Service, No. 1 Creston, San Luis Obispo Co.	20-28-15	rig	rigging up
Latin Amer. Pet., No. 1 Shandon, San Luis Obispo Co.	21-27-15	4,615	recemented
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	24-28-12	1,000	sd. sh. drilling
Martin, J. D., No. 1 Edna, San Luis Obispo Co.	5-31-13	3,010	suspended
Schockley, C., No. 1 Pismo, San Luis Obispo Co.	13-32-13	3,094	suspended
Pacific Inland, Well No. 1, Monterey Co.	19-23-15	1,160	suspended
Brown, F. A., No. 1 Parkfield, Monterey Co.	15-23-14	816	suspended
Irma Investment Co., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,345	cemented
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,635	gas well—idle
Valley Expl. Co., No. 1 Dudley Ridge, Kings Co.	20-23-20	3,750	cleaning out
Kettleman Lakeview, No. 1 Tulare Lake, Kings Co.	11-23-19	1,304	suspended
Purman, T. H., No. 1 Reef Ridge, Kings Co.	36-23-17	3,595	br. sh. drilling
Seymour, L. W., No. 1 Avenal, Kings Co.	10-23-16	1,148	suspended
Utah Dev. Co., No. 1 Pyramid Hills, Kings Co.	13-24-18	....	material
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	6,811	sd. sh. drilling
Orinda Pet., Well No. 1, Contra Costa Co.	32- 1- 3	2,012	hd. sd. drilling
Pettingall, C. E., No. 1 Porterville, Tulare Co.	15-22-27	912	hd. sd. drilling
Knapp, George, No. 1 Porterville, Tulare Co.	20-22-27	700	sd. sh. drilling
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,092	suspended
Larson, S. E., No. 1 Tulare Lake, Tulare Co.	20-24-23	520	sd. sh. drilling
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-15- 4	910	hd. sd. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 2-10	4,117	hd. sd. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23- 3	2,520	sd. sh. drilling
Sargent Oil Co., No. 1 Sargent, Santa Clara Co.	1-12- 3	rig	suspended

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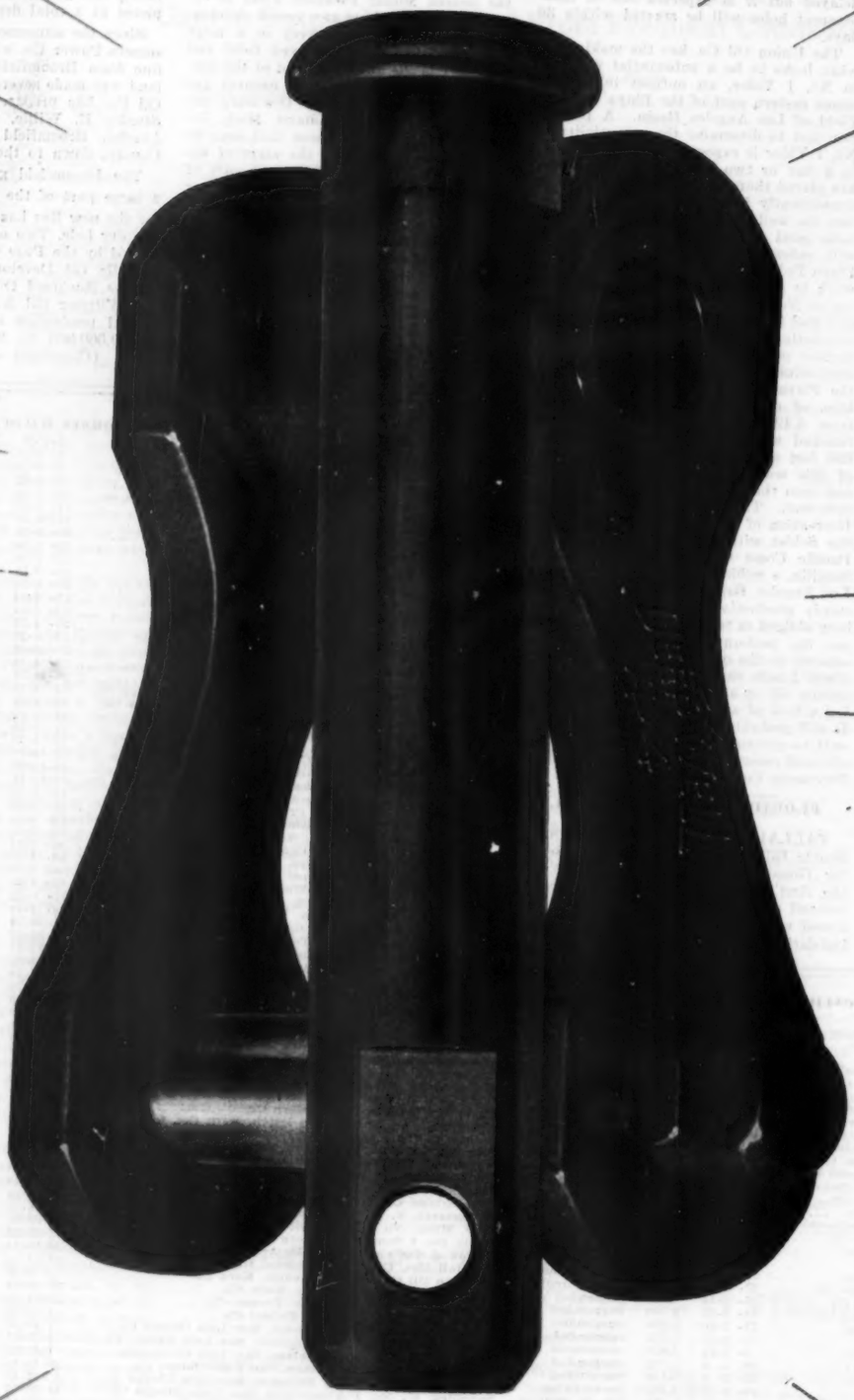

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New Gas Reserve Found in Colorado

Hobbs Proration Continued to June; Pipe Line Runs in April Were 977,094 Bbls. New Wyoming Wildcats

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., May 18.—Pipe line runs from the Hobbs Pool in April were 977,094 bbls. The American Potash Co. will build a potash refinery in Eddy County. There were no completions reported in New Mexico and one new location was made on the Kenna Dome on the boundary between Chaves and Roosevelt Counties.

The Mountain Fuel Supply Co.'s discovery well on the Powder Wash structure in Colorado showed an increase in quantity of gas and pressure when gauged the second time. It opens a new gas reserve for the pipe line into Utah and Idaho. The Reiter-Foster Oil Co.'s Greasewood Dome well in Weld County, the first started since the discovery well came in last fall, is spudding.

In Wyoming, the Prairie Oil & Gas Co. is starting a new wildcat in Laramie County and the Producers & Refiners will drill the Overland Dome in Carbon County. The Mountain Fuel Supply Co.'s No. 2 Capper, in the North Baxter Basin Field, is making 20 to 25 bbls. of high gravity oil, the first important show of oil in that field. The Midway Dome test is reported through the first two benches of the Sundance with no oil showing.

Montana reported two new operations, a gas well, a small oil well and one dry hole in the Kevin-Sunburst Field. One new location was reported in the Barthelote district and Liberty County reported a gas well on the Bear's Den structure.

NEW MEXICO

Pipe line runs from the Hobbs Pool in April aggregated 977,094 bbls., a daily average of 32,570 bbls. Of the total 299,940 bbls. were taken by the Atlantic Pipe Line Co., 333,049 bbls. by the Shell Pipe Line Co., 295,605 bbls. by the Humble Pipe Line Co. and 48,504 bbls. by tank cars to the Tidal Refining Co. Runs by companies were as follows:

Amerada Petroleum Corp.	105,789
Atlantic Oil Producing Co.	5,786
Continental Oil Co.	69,238
Empire Gas & Fuel Co.	44,791
Getty Oil Co.	34,590
Gypsy Oil Co.	71,955
Humble Oil & Refining Co.	109,080
Landreth Production Corp.	16,422
Mid-Continent Petroleum Corp.	3,431
Midwest Refining Co.	118,268
Ohio Oil Co.	62,822
Prairie Oil & Gas Co.	14,128
Shell Petroleum Corp.	128,461
Skelly Oil Co.	12,526
Sun Oil Co.	39,704
California Co.	21,381
The Texas Company	48,971
Texas Pacific Coal & Oil Co.	13,570
Tidal Oil Co.	48,504
Vacuum Oil Co.	3,391
Walker Oil Corp.	2,346
Total	977,094

Total runs since the field went on proration on July 10, 1930, to May 1, 1931, were 9,471,059 bbls.

Due to the fact there is no change in pipe line connections or pipe line nominations in the Hobbs Pool the proration schedule used for the period May 1 to 15, inclusive, will be in effect for the period May 16 to May 31, inclusive.

The American Potash Co. is reported to have made a location for a refinery near Loving, 15 miles southeast of Carlsbad, on the Atchison, Topeka & Santa Fe Railroad, for the recovery of potash. The first unit will have a capacity of 400 tons of finished product daily. The railroad will build a 5-mile branch to the refinery and the company will build a narrow gauge line from the mine to the refinery. The company has sent out warnings that no more workers are needed.

Lea County

The Midwest Refining Co.'s No. 26 Capps, C SE SW, Section 3-19-38, the only active drilling well in the Hobbs Pool, is drilling at 3,340 feet in anhydrite. The 10¾-inch is at 1,614 feet.

Leonard & Levers' No. 1 Justis, C SE NE, Section 19-25-37, the only active operation in the Jal area, is bottomed at 2,615 feet in lime and is running the 6⅝-inch. It bottomed the salt at 2,595 feet and topped the brown lime at 2,610 feet. The elevation is 3,072 feet.

Culberson & Conrad's No. 1 State, C NE, Section 22-18-34, Caprock area, is rigging up rotary.

De Baca County

Matador Oil Co.'s No. 1 Wood, NE SW SW, Section 6-4n-20, Salada Creek, is drilling at 3,002 feet after landing 6⅝-inch at 3,001 feet.

Chaves County

C. S. Peterson and others have made location for their No. 1 Frank Good, NW SE NE, Section 32-5s-30, on the Kenna Dome on the boundary line between Chaves and Roosevelt Counties, and is moving in steel derrick and materials. He has contracted to drill a 5,000-foot test, if necessary, for the owners of 15,000 acres on the structure who have pooled their acreage into a community lease.

Warman Oil Trust's No. 1 Seibert, NE, Section 27-13-24, Blackdom district, is shut down at 2,686 feet, and R. T. Neal and others' No. 1 Russell, SW NW NW, Section 21-14-25, Hagerman district, is bottomed at 2,320 feet and fishing for bit and repairing engine.

San Miguel County

The Cibola Petroleum Co. is reported to have let the contract to C. S. Ringle for the completion of its No. 1 Larrazolo, SW cor. NE, Section 9-13-14, Ribera district, which has been standing for some time at 750 feet. O. A. Larrazolo, president of the company, graduated in geology and engineering from Notre Dame University, and is a son of O. A. Larrazolo, a former governor of New Mexico. This well spudded in October, 1929, in a 22-inch hole and started in red beds. It had a slight show of oil at 595 feet. Starr Oil Co., Ltd.'s No. 3 Adams, NE cor., Section 25-17-17, Dunken district, is shut down at 3,690 feet to install new cable.

Harding County

Kummbaca Oil & Gas Co.'s No. 1 Kerline, NW cor. SE, Section 34-21-30, Ute Creek Butte district, which had shows of noninflammable gas at 287 and 825 feet, is drilling at 1,230 feet. The gas has been shut off.

Guadalupe County

New Mexico Producing & Refining Co.'s No. 1 McMullen, SW cor., Section 24-5n-16, Mesa Leon Dome, will start in a new hole instead of going on down in the well drilled 200 feet by the Los Angeles-Hollywood Syndicate. Rigging up is in progress. Turnkey contract has been given to the Eppenauer Drilling Co. of San Angelo, Tex. The 10-inch will be carried to the top of the Pennsylvanian at around 3,000 feet and the contract provides for an 8-inch hole at 4,500 feet. The company has 50,000 acres of fee, state and permit land.

San Juan County

Murchison Oil Co.'s No. 6 Garland, SE NW SE, Section 34-29-11, Kutz Canon district, is rigging up cable tools to complete. It was drilled to 1,730 feet last fall with rotary. Kutz Canon Oil & Gas Co.'s No. 1 Day, SW cor., Section 20-28-10, is drilling at 3,210 feet in the Lewis shale, and Continental Oil Co.'s No. 24, SW cor. NW, Section 1-29-19, Rattlesnake Dome, is sidetracking at a total depth of 4,730 feet.

COLORADO

Moffat County

The Mountain Fuel Supply Co.'s No. 1 Musser, C NE, Section 5-11n-97, which opened a new gas field in northwestern Colorado recently on the Powder Wash structure, 20 miles east of the Hiawatha Dome, was regauged and made 35,188,000 feet in 24 hours with a pressure of 685 pounds, an increase of about 1,000,000 feet in quantity and 55 pounds in pressure. The well was drilled to 2,145 feet last fall and was shut down for the winter after cementing 13⅜-inch on bottom. Drilling was resumed last month and it was deepened only 7 feet when it came in and was completed. The size of the pipe indicated a much deeper hole was in prospect and it is understood the gas sand was found in the upper Wasatch, of Tertiary age, approximately 2,000 feet higher geologically than the first important gas sand in the Hiawatha Field to the west. It is probable this is the highest geological formation producing in the Rocky Mountain area. The opening of this field affords a new supply of gas for the Western Public Service Co.'s gas line into Utah, which is to be continued into southern Idaho. There have been reports in circulation recently that a larger gas supply was needed and there was unofficial talk that the Mountain Fuel Supply Co. might seek to augment its reserves by going south to the Bell Rock structure, near Craig, where the Midwest brought in a new gas structure last fall, and possibly to the Ashley Valley and Rangely Domes. W. T. Nightingale, geologist for the Mountain Fuel Supply Co., is credited with the first mapping of the Powder Wash Dome.

Mountain Fuel Supply Co.'s No. 2 State, SE NE, Tract 37-12n-100, Hiawatha Dome, is standing with 10¾-inch cemented on top of a sand in the Tertiary at 2,260 feet. It made 15,000,000 feet before cementing and gives indications of being a large well.

Weld County

Reiter-Foster Oil Co.'s No. 1 Ida Johnson, C NE NW, Section 24-6n-61, Greasewood Dome, commenced spudding with rotary on May 8 and set 15½-inch at 153 feet. It is drilling at 225 feet. Manning & Terry, Inc., who have the contract, are going to try for a record for rotary drilling in this territory and are expecting to complete the well within 90 days. It will be drilled to around 6,400 feet with rotary and then change over to cable tools. There is some figuring being done by several interests with a view to drilling in the Weld and Morgan County districts, but no additional locations have been announced.

Adams County

Nettie M. Slatt's No. 1 Hills, SE cor., Section 27-3s-64, Watkins district, is drilling at 3,400 feet in black shale and carrying 8⅝-inch. The hole continues to make a good show of gas.

Morgan County

Indian Territory Illuminating Oil Co.'s

(Continued on Page 132)

BAD OIL MAY BE TREATED IN SEVERAL WAYS BY USE OF PROPER TYPE HEATERS

By George F. Beekman
Production Superintendent, Continental Oil Co., Nocona, Tex.*

At this time of the year we find the problem of treating oil for pipe line delivery one of the industry's most troublesome. In districts where heavy oil is produced a large per cent of time is taken up in winter by getting oil in shape for pipe line runs, and our first thought is keeping up pumping equipment in order to get the oil to the tanks in the best possible shape before treatment is started.

The different types of heaters used for oil treatment are boilers, circulators and gun barrel heaters. The main idea in treating oil is getting the proper amount of heat; this may be obtained through any of the above mentioned heaters. After the heat has reached the proper point, which must be governed by the particular grade oil being treated, it is usually necessary to use some force to break the oil, and in most cases chemicals are used, but in some instances hay or excelsior tanks are used with good results.

In using a hay tank, the tank is set low enough that the oil can gravitate from the gun barrel, yet high enough to allow gravitation to the stock tanks. It is necessary to build false bottom in the tank about 2 feet from the bottom, using 1"x4" lumber, and leaving about one-half-inch space between each one to allow oil to pass through; the next 3 feet should be filled in with excelsior and topped with boards, leaving a passage for oil, but no excelsior should be permitted to escape and plug up the lines. The gun barrel gravity line is connected to bottom of settling tank, preferably in the center of the tank, which allows oil to travel upward through the excelsior. This will usually break out the water and permits the oil to reach the stock tanks in good shape.

Where chemicals are used a settling tank is usually needed, and should be large enough to handle 24 hours' production. If the lease is producing 100 bbls. daily at least a 100-bbl. settling tank should be used. Chemicals should be put in the lines either by tapping the lead line on a 24-hour well, or by connecting into the manifold before the oil reaches the heat, as chemicals will break the oil much better if put in before reaching the heat than after having passed it. The type of heater to be used should be governed by material available. An oil boiler unsafe for high pressure, yet having no leaks, makes a good heating plant, but flue sheets are usually affected by salt water, making repairs necessary. When a boiler is used the wells are connected in the barrel end and oil pumped through the boiler and out the dome connection to the gun barrel. As a boiler has considerable volume heat can be obtained with very little fuel.

On small production good results can be obtained by installing a gun barrel heater. This heater is made by welding a piece of 6⅝-inch or 8-inch pipe through the gun barrel horizontally, about 1 foot from the bottom of the tank and extending 2 feet from each side, one end to be threaded for ell and stack. Place the burner in the open end, using burner best adapted for your fuel.

I believe the circular is the most economical and least troublesome heating plant. This type heater can be made in sizes suitable for the lease on which it is to be installed. The heaters can be made with 6⅝-inch and 10, 8 and 12½-inch or

(Continued on Page 132)

*Before Wichita Falls Chapter of A.P.I. Division of Production.

Eighty-eight Completions in East Texas

There Are 448 Drilling Wells; 130 New Locations During Week. Lathrop-Gladewater Area Well Estimated 1,000 Bbls. Hourly

By L. E. Bredberg
Fort Worth Bureau. The Oil and Gas Journal

FORT WORTH, Tex., May 18.—There are 448 drilling wells in the several active counties of the East Texas district, with 130 locations reported this week and 88 completions, 86 of these completions coming from Gregg and Rusk Counties alone.

There are 117 tests drilling in the Joiner Pool, 156 drilling in the Kilgore area, and 104 in the Lathrop area. Forty-one first reports were named for the Joiner Pool, 64 for the Kilgore Pool and 16 for the Lathrop Pool. Forty completions were reported this week in the Joiner area, 35 in the Kilgore area and 11 in the Lathrop area. The Lathrop Pool was the last to be discovered, but the first to be put under proration, partially due to the fact that it is held mainly by major companies, two large companies, Arkansas Fuel Oil Co. and Yount Lee interests holding approximately 6,500 acres around the discovery well. Fewer wells to be gauged and the land held in larger leases also contributed to bringing proration to the area first. Proration has no doubt been the restraining influence in this pool, holding down the number of activities and locations as shown in the activity report. The daily potential of the pool is now held at 153,215 bbls., while the total allowance is 35,000 bbls. Gauges were taken on 49 producing units to form this potential.

A proration report has been completed on the Joiner Pool but is not yet available. No report has yet been worked up on the Kilgore Pool.

Production of the Joiner Pool wells has been pinched to 190 bbls. per well.

Over 1,000 Bbls. an Hour

Texas Pacific Coal & Oil Co.'s No. 1 fee in the southwest corner of the George Hampton Survey, between the Lathrop Pool and Gladewater in Gregg County, came in this week for one of the best wells in the county, making 997 bbls. the first hour, May 16, when it was completed. It really looked better than 1,000 bbls. per hour, but was pinched in which prevented further gauging. This well is a deciding connecting link between production, and increases the prospects of acreage around it. Flannery and others' No. 1 York, approximately 1 mile farther west, was also brought in as a good well at a total depth of 3,582 feet after topping sand at 3,515 feet, and the heavier saturated sand at 3,560 feet. This extension also enriches the acreage to the west of the former well. The Texas Pacific Coal & Oil Co.'s well was completed at a total depth of 3,599 feet, and the Woodbine was topped at 3,565 feet.

Gregg County Extension

Another extension for Gregg County was the F. H. E. Oil Co.'s No. 1 Flemister in the G. W. Hooper Survey, lengthening the pool about another 1½ miles to the northwest of the Sultan Oil Co.'s producer which was completed a few weeks ago. The Flemister well was completed for an initial production of 140 bbls. per hour through eleven-sixteenths inch choke at a total depth of 3,638 feet. Saturated sand was first cored from 3,610-08 feet. Several hundred more acres are proved to production through this completion, adding to the total potential producing acreage of the western rim of the Sabine uplift and responsible for a new change in the figures which have been ever changing in regard to this total.

Those who were hasty in estimating the total producing acreage for this vast pool have had to extend their totals each week as more and more extensions were made to each pool in the district, adding hundreds of acres to production, causing the first estimates of 30,000 or 40,000 acres to increase to the present estimated figure of around 130,000 acres which will probably be increased during the coming week as other wells are brought in, and other extensions made.

May Link Lathrop and Kilgore

Gulf Production Co.'s No. 1 Fisher, in the F. W. Johnson Survey, helped to strengthen the belief that the Lathrop and Kilgore Pools will link up for it is approximately 2½ miles southwest of the present proven limits of the Lathrop Pool, and has cored a richly saturated oil sand at 3,554 feet. It is 330 feet northwest of the northeast corner of the Alvice Survey but in the Johnson Survey, and it is a strategically interesting position between producing wells.

The Kilgore-Joiner Pools were given another definite link this week when Gulf Production Co.'s No. 1 Cashen in the Henry B. Dance Survey, approximately 1½ miles southeast of Overton, came in for an initial production of 124 bbls. per hour through three-quarter-inch choke at a total depth of 3,645 feet. Sand was topped at 3,630 feet. It is approximately 3 miles south of Gulf and Devonian's No. 1 Motely which came in a few weeks past extending the Kilgore Pool 2½ miles to the southwest.

Gulf Production Co.'s No. 1 Crim, 1 mile to the east of No. 1 Cashen, topped the sand at minus 3,200 feet, while the datum on the Cashen is minus 3,232 feet. It came in making 192 bbls. per hour through 2½-inch tubing. Total depth is 3,752 feet.

Smith County Tests

It is still unknown just how far the Rusk County area will be extended to the west of Overton, and wells drilling over in Smith County will all be closely watched, although Sinclair Oil & Gas Co.'s No. 1 Wiley, 1 mile to the west of Guy Lewis' producer, has been abandoned at a total depth of 3,894 feet, marking the western producing limits of the Joiner Pool.

Sinclair Oil & Gas Co.'s No. 1 Jarvis, the farthest southwest producing well of the Joiner Pool, located in the Juan Vargas Survey, over the line in Smith County, is now making around 7 per cent salt water and b.s. when opened. It is pinched to 688 bbls. per day, making only 1 to 2 per cent water on this choke. This well, too, is evidently close to the western producing limits of the field, and pinching its flow will probably be a deciding factor in preventing its drowning by water.

Sinclair Oil & Gas Co.'s No. 2 Mayfield, another Smith County well, approximately 1½ miles northwest of the Lewis producer, was completed this week for an estimated 1,200-bbl. production at a total depth of 3,843 feet. Sand was topped at 3,843 feet.

La Salle and Davenport's No. 1 Kinney, in the J. B. Cadena Survey, strengthened the southwestern part of the Joiner area this week when it was completed for an initial production of 65 bbls. the first hour through a three-quarter-inch choke on a 2-inch flow line through casing. Sand was cored from 3,610-37 feet and total depth is 3,647 feet. It is east of Sinclair's No. 1 Kinney, which was the first well produced in this area.

Water Scare in Joiner

A salt water scare was injected into the minds of operators in the Joiner Pool this week when it was reported that Moss and Urschell's No. 2 Mayfield in the Ximinez Survey was making water. It was swabbed through tubing and the fourth time the swab was run to about 2,000 feet it brought out approximately 200 feet of oil with 6 or 7 feet of salt water. It is now shut down for orders. This test is east of the heaviest producing area of the Joiner pool, but between the Joiner discovery and Deep Rock Oil Co.'s first extension, consequently may be considered in a vital position, casting an ominous appearance upon surrounding wells which have not been reported as showing any water up to the present time.

The market conditions of the district are considered unstable due to the fact that many contracts have been made at much lower prices than the Humble and Magnolia postings, and other contracts are being made for lower prices, while operators are continuing to sell their oil below 67 cents to obtain pipe line connections, and if proration of the three areas does not hold, and if many injunctions against proration are obtained operators in the area may soon feel a cut in the present prices which have been posted by the major purchasers in the areas.

However, it is known that certain parties have been trying to obtain large contracts in Rusk and Gregg Counties at prices far below the posted prices, but have been able to obtain very little at the prices offered, which goes to show that the producers are holding out for better prices, many of them not selling at the first price offered although their wells may be unconnected.

Another question has come up in regard to some of the purchasers paying lower prices for royalty oil than the posted prices, the question being whether the purchasers will later be forced to remunerate the royalty owners for the losses they have suffered through the cheaper purchases of their oil.

Van Pool

Pure Oil Co. abandoned another west side well in the Van Pool, Van Zandt County, this week, the test being in the Mund Gross Survey on the Cook farm. This test was its No. 3 Cook, and was bottomed at 3,031 and given up as a dry hole.

The Sinclair-Texas Pipe Line Co. has been slow getting material and pipe on location for its 12-inch line from the Gregg-Rusk areas to Colonel's Station near Mexia, but is now starting to lay the line which willl be one of the largest carriers out of the pools, connecting with the Prairie Pipe Line Co.'s main lines at Colonel's Station, and being placed in position by this hook-up to run oil either north to Oklahoma and Kansas or south to Houston.

Rusk County

Abercrombie and others' No. 3 E. Cantrell, top sand 3,682 feet, initial production 500 bbls. in 1½ hours through 1½-inch tubing choke, total depth 3,708 feet. Beard and Hammon's No. 1 Keeling, sand 3,715-83 feet, initial production 4,000 bbls. per day through tubing, total depth 3,783 feet. Belcher and others' No. 1 Thrash, sand 3,703-45 feet, initial production 200 bbls. per hour through casing, total depth 3,745 feet. Bill and Dave's No. 2 C. Young, sand 3,708-50 feet, initial production 120 bbls. per hour

(Continued on Page 63)

EAST CENTRAL TEXAS WILDCATS

Week Ending May 18

CHEROKEE COUNTY

Company, well, farm name, section and block—	Remarks:
Ben Banner's No. 1 J. Williams Estate, 150 ft. S and 300 ft. W of SE cor. of the N. Hogg heirs and in the J. L. Hogg heirs Sur.	Drlg. 2,300 ft.
D. H. Byrd et al's No. 1 Dixie, 1,385 ft. from N along E line of G. W. Forman Sur. from NW cor. of W. H. Felder 854-ac. tract and 150 ft. W at right angles to E line	Drlg. 3,939 ft.
Grey et al's No. 1 McGee, 1,600 ft. from W and 200 ft. S of NE cor. of McKnight Sur.	Drlg. 3,376 ft.
Helen-Clare Oil Co.'s No. 1 Mrs. M. P. Perkins, 1,800 ft. from N and 450 ft. from W of survey, Thomas Stafford Sur.	Moving in.
Fain and McGaha's No. 1 W. A. Shaw, 990 ft. from S and 1,400 ft. from W of W. A. Shaw 128-ac. tract, Isaac Reed heirs Sur.	Drlg. 3,710 ft.
McDonald Bros.' No. 1 Newton, center of 113-ac. tract, Thomas Quevedo Sur., 3 miles N of Jacksonville	Drlg. 3,595 ft.
Rowan Nichols and Tidal Oil Co.'s No. 1 W. T. Norman, 330 ft. W of E line and 950 ft. N of S line, J. H. Irby Sur.	Moving in.
Sinclair Oil & Gas Co.'s No. 1 G. T. Martin, 200 ft. from N and 629 ft. from W line of 62.8-ac. tract, Larkin Baker League Sur.	Coring sand 3,999 ft.; water.
William A. Stone's No. 1 Blount Decker, 900 ft. E of E line of S. Selman Sur. and 1,200 ft. S of N line of E. M. Decker 406-ac. tract in George Ruddle Sur.	Top Pecan Gap 4,265 ft.; drlg. 4,530 ft.
Walton Oil Co.'s No. 1 E. Singletary, 250 ft. W and 150 ft. N of NE cor. of M. Lacey Sur. and in Water Sur. on Singletary 84-ac. tract	Drlg. 2,960 ft.

DELTA COUNTY

Delta Development Co.'s No. 2 Hays Kinney, 300 ft. S of No. 1 Cooper, Townsite Sur.	Coring 3,078 ft.
D. S. Hood's No. 1 J. J. Balser, 185 ft. from S and 380 ft. W of Balser 40-ac. tract in SE cor. T. B. Laddin Sur.	Shut down 1,559 ft.
Worthington and Stedman's No. 1 W. H. Dejehett, 150 ft. from S and 776 ft. from W of 52-ac. tract, E. Chick Sur.	Shut down 2,300 ft.

GREGG COUNTY

O. O. Alford et al's No. 1 L. M. Colburn, 208 ft. from N and 392 ft. from E of 39.7-ac. tract, Henry Hobson Sur.	Derrick.
Angeline & Burkett's No. 1 J. G. McGrede, 298 ft. from E and 155 ft. from S of Lot No. 3, Dolores Sanches Sur.	Sand 3,608-28 ft.; T. D. 3,628 ft.
Arkansas Fuel Oil Co.'s No. 1 Allison et al, 300 ft. from N and 250 ft. from W of tract and survey, William Robinson Sur.	Derrick.
Arkansas Fuel Oil Co.'s No. 1 J. C. and R. S. McKinley, 250 ft. from N and 175 ft. from E of 160-ac. tract and 87ac. lease, G. W. Hooper Sur.	Drlg. 2,857 ft.
Arkansas Fuel Oil Co.'s No. 1 G. A. Castleberry, 250 ft. from S and 250 ft. from W of 52-ac. tract and lease, Dolores Sanches Sur.	Set 6⅝-in. csg.; T. D. 3,611 ft.
Arkansas Fuel Oil Co.'s No. 2 P. D. Harrison, 282 ft. S and 143 ft. E of SE cor. of Tenery 40-ac. tract, William Robinson Sur.	Derrick pattern.

(Continued on Page 119)

Two Interesting Tests in West Texas

One Southwest of Fort Stockton and Other Northwestern Loving County Wildcat Which Looks Like Delaware Pool Opener

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., May 18.—Penn Oil Co.'s No. 1 Alvis, approximately 15 miles southwest of Fort Stockton, is probably the most interesting test in the Permian Basin at the present time, dividing interest with Lewis and Slagel's No. 1 Cartwright, wildcat in northwestern Loving County, which has the appearance of a new Delaware Pool opener for that county.

The former test is located in Section 155, Block 3, T.&P. Survey, and is showing oil and gas through a hole full of water, the showing coming from soft lime logged at 3,585-90 feet. The water is coming from around 2,935 feet, and 6⅝-inch casing will be cemented to shut off the water and make a fair test possible.

Pete Hoffman and others, who are drilling several wells in the Wheat Pool, Loving County, completed another good well for the field when their No. 1 Ramsey in Section 83, Block 1, W.&N.W. Survey, made 715 bbls. during the first 19 hours following a 140-quart shot from 4,206-45 feet. Total depth of the hole is 4,245 feet.

Eppenauer Drilling Co.'s No. 1 Salisbury, a three-quarter-mile north extension of the Wheat Pool, is not a large well, but proves more acreage to production in the pool, and should be credited accordingly. It flowed 117 bbls. on May 16 after 2-inch tubing had been run for a test before given a shot. Total depth of the hole is 4,403 feet. It was formerly given a 190-quart shot from 4,381-82 feet and flowed 132 bbls. per day before drilling deeper. Top of the pay is 4,380 feet. It is located in Section 89, Block 1, W.&N.W. Survey.

Lewis and Slagel's No. 1 Cartwright in Section 1, Block 57, T.&P. Survey, in the northwestern part of the county, is cleaning out and swabbing around 12 bbls. per day from pay topped at 3,175-80 feet. It was formerly drilled to 3,182 feet but plugged back to 3,179 feet to shut off water which was encountered. This well is considerably higher than producers in the Wheat Pool, but due to the amount of oil it has been producing it has a strong appearance of opening up another pool for the county.

The Big Lake Oil Co. is now deepening its No. 5-C University which has been producing at a total depth of 8,731 feet, production coming from an upper pay. It is now coring ahead with a 2-inch core barrel, making present total depth 8,762 feet, the well gauging 241 bbls. the first 11 hours ending 7 a.m. May 18, making around 30 bbls. per hour.

Oil movement in the Permian Basin during the week ending May 6 showed a gain of around 41,000 bbls. per day, which is over 39,950 bbls. daily more than the production.

PANHANDLE DISTRICT

Daily production of the Panhandle district increased during the past week due to new potentials reported by the field umpire. Gray County led the district by a gain of around 3,300 bbls. per day, while Moore County, which has recently become active and especially interesting, showed a gain of around 1,100 bbls. Carson County has 243 wells producing 4,769 bbls.; Gray has 759 wells producing 45,275 bbls; Hutchinson has 902 wells producing 9,092 bbls.; Moore has 24 wells producing 1,936 bbls., and Wheeler 44 wells producing 218 bbls. Total number of wells is 1,973, and total production 61,290 bbls.

WICHITA FALLS DISTRICT

Knox and others opened up another producing area for Young County during the week when their No. 1 Burkett, 4 miles northeast of Graham, was reported good for around 100 bbls. per day at a total depth of 2,705 feet. Top of the pay was logged at 2,703 feet. The well is in Section 3,412, Block 9, T.E.&L. Survey, and paves the way for other drilling in the immediate area, although production in this county does not bring a premium and pipe line connections are difficult to obtain.

COMPLETIONS IN WEST TEXAS

Jones County

Julian and others' No. 1 Williams, dry and abandoned, total depth 2,581 feet.

Pecos County

Corvette Oil Co.'s No. 3 Moore, top pay 444 feet, initial production 580 bbls., total depth 493 feet.

Schleicher County

Texas and Grant's No. 1 Allison, dry and abandoned, total depth 5,080 feet.

Upton County

Gulf Production Co.'s No. 93 McElroy, top pay 2,786 feet, shot with 345 quarts from 2,800-2,978 feet, initial production 129 bbls., total depth 2,985 feet.

WEST TEXAS PRODUCTION

Week ending May 16

County—	Wells	Bbls.
Andrews	3	....
Crane	377	18,911
Crockett	51	1,558
Ector	78	7,037
Fisher	10	689
Garza	..	18
Howard-Glasscock	539	29,429
Irion	9	51
Jones	79	1,311
Loving	39	3,301
Mitchell	111	1,981
Pecos	545	75,320
Reagan	255	15,560
Runnels	5	86
Scurry	5	....
Upton	360	5,340
Taylor	3	96
Ward	57	3,618
Winkler	595	44,862
Total production this week		213,168
Total production last week		211,954
Increase		1,214

RUNS THROUGH TRUNK LINES

Company, size and location—	Bbls.
Atlantic, 10-inch, Houston	11,490
Gulf, 10-inch, Ranger	6,829
Humble, 2 and 8-inch, San Angelo	41,295
Humble, 10 and 12-inch, Comyn	42,467
Illinois, 2 and 8-inch, Del Rio	25,913
Magnolia, 8-inch, De Leon	25,000
Pasotex, 8-inch, El Paso	14,356
Shell, 10-inch, Healdton	27,090
Shell, 10-inch, Houston	27,684
Texas, 12-inch, Houston	22,112
Total	244,256

RUNS TO WEST TEXAS REFINERIES

Big Spring Ref. Co., Big Spring	921
Burford Ref. Co., Pecos	4,721
Cosden Ref. Co., Big Spring	7,860
Col-Tex Ref. Co., Colorado	3,333
Humble Oil & Ref. Co., McCamey	3,724
Great Western Ref. Co., Big Spring	2,538
Tonkawa Ref. Co., Pyote	1,592
Wickett Ref. Co., Wickett	545
Total	25,234

TANK CAR SHIPMENTS

Shell Pet. Corp., from McCamey	500
Fox & Thorsen, from Mertzon	50
Big Lake, from Texon	3,000
Total	3,550
Total daily average production	247,031
Total daily average distribution	283,040
Daily average from storage	35,959

COMPLETIONS IN PANHANDLE DISTRICT

Gray County

Shelby Oil Co.'s No. 1 Heaston, top pay 3,211-42 feet, shot with 160 quarts from 3,224-92 feet, initial production 504 bbls., total depth 3,292 feet. Stanolind Oil & Gas Co.'s No. 1-C Cobb, top pay 3,254-63 feet, initial production 480 bbls., total depth 3,272 feet.

Carson County

Interstate Production Co.'s No. 1 Coffee, first gas 2,590 feet, increases at 2,593-2,603 feet, 2,615-29 feet and 2,690-2,755 feet, initial production 20,000,000 feet of gas, total depth 2,832 feet.

Hutchinson County

Antelope Creek Oil Co.'s No. 1 Sanford, dry and abandoned, total depth 3,176 feet.

Moore County

Plains Holding Co.'s No. 1 Bivins, gas at 2,390 feet, 2,425 feet, 2,510 feet, 2,680 feet and 2,700 feet, initial production 45,000,000 feet of gas, total depth 2,700 feet.

NORTH TEXAS PRODUCTION

Week ending May 16

Panhandle District—	Bbls.
Carson County	4,765
Gray County	45,230
Hutchinson County	9,101
Moore County	1,937
Potter County	....
Wheeler County	217
Total production this week	61,250
Total production last week	55,673
Increase	5,577
Wichita Falls District—	
Archer County	11,442
Baylor County	470
Clay County	608
Cooke County	1,746
Foard County	49
Jack County	1,161
Haskell County	23
Montague County	3,390
Throckmorton County	219
Wilbarger County	9,811
Wichita County	18,719
Young County	12,506
Total production this week	60,244
Total production last week	60,163
Increase	81
Ranger District—	
Brown County	3,519
Callahan County	2,546
Coleman County	1,437
Comanche County	721
Palo Pinto County	323
Eastland County	3,108
Shackelford County	3,781
Stephens County	4,467
Total production this week	19,902
Total production last week	19,886
Increase	16

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended May 18

ANDREWS COUNTY

Company, well, farm name, section and block— Remarks—

Deep Rock Oil Co. et al's No. 1 Kuykendall, 2,310 ft. from N and E of SW cor. Sec. 24, School Blk. A-40.. Cleaning out; total depth 4,648 ft.

BORDEN COUNTY

George Goodrum's No. 2 Conrad, 1,450 ft. from N and 2,500 ft. from E lines, Sec. 55, Blk. 25, H.&T.C. Sur... Shut down 780 ft.

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F. Sur. ..... Shut down 1,935 ft.

E. L. Chapman's No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur. ..... Shut down 1,302 ft.

Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 930 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur. ..... Shut down 2,820 ft.; set 6⅝-in. casing 2,775 ft.

Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 miles S of Alpine ..... Shut down 1,750 ft.

COKE COUNTY

Reed, Hitchens et al's No. 1 Duncan, 1,980 ft. from S and 1,650 ft. from E of Sec. 239, Blk. 2, H.&T.C. Sur. (4,500-ft. cable test) ..... Shut down 30 ft.

CONCHO COUNTY

Beesley et al's No. 1 Waring Estate, 400 ft. from N and E Sec. 163, T.&N.O. Sur. ..... Shut down 267 ft.

Betts & Dennis' No. 1 H. E. Woods, 710 ft. from E and 150 ft. from S Sec. 3, H.E.&W.T. Sur. ..... Shut down 30 ft.

Turner et al's No. 1 Borsig, 150 ft. from S of NE cor. G. Emmig Sur. 130, 6 miles W of Paint Rock ..... Shut down 1,350 ft.

CRANE COUNTY

Cranfill Bros. and Gulf's No. 1 J. B. Tubb, 2,310 ft. from N and 330 ft. from E of Sec. 8, Blk. B-37, Public School Land ..... Total depth 5,336 ft.; to shoot.

E. H. Sides and others' No. 1 B. P. Nolen, 150 ft. from S and 150 ft. from W of N 160 acres, Sec. 8, Blk. 31, H.&T.C. Sur. ..... Drlg. 475 ft.

(Continued on Page 122)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending May 18

CARSON COUNTY

Company, well, farm name, section and block— Remarks:

Deep Lake Oil Co.'s No. 1 Keys, NE cor. SW, Sec. 1, Blk. 4, I.&G.N. Sur. ..... T.D. 1,980 ft; U.R. 10-in. csg.

El Paso-Amarillo O. & G. Co.'s No. 1 Chapman, 594 ft. S, 1,455 ft. E, Sec. 7, Blk. 2, A.B.&M. Sur. ..... Rig.

North American O. & G. Co.'s No. 1 Burnett, 1,341 ft. S, 662 ft. E of S E½, Sec. 30, Blk. 4, I.&G.N. Sur. .. Drlg. 2,193 ft; S.G. 2,115 ft. and 2,135 ft.

Red River Gas Co.'s No. 1-A Bennett, 660 ft. N, 660 ft. W, NW, Sec. 2, Blk. 5, B.&B. Sur. ..... Rig.

The Texas Co.'s No. 1 Schaffer, C SW, Sec. 68, Blk. 4, I.&G.N. Sur. ..... Fishing 2,725 ft; 10,500,000 ft. gas 2,665 ft.

The Texas Co.'s No. 1 Bednarz, 317 ft. S, 172 ft. W, S 100 ac. of SW, Sec. 2, Blk. 4, I.&G.N. Sur. ..... Drlg. 2,390 ft.

CHILDRESS COUNTY

C. L. Sloan et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands ..... T.D. 5,000 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 21, H.&G.N. Sur. ..... Fishing bit 1,992 ft.

COTTLE COUNTY

Darby Oil Co. and Merry Bros. & Perrin's No. 1 Richards, 330 ft. NE, Sec. 13, B.S.&F. Sur. ..... Drlg. 4,410 ft.

GRAY COUNTY

Anderson et al's No. 2 Vollmert, 330 ft. N and W, SW, Sec. 140, Blk. 3, I.&G.N. Sur. ..... Rig.

Boyles et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 65, Blk. 25, H.&G.N. Sur. ..... Spudded and S.D.

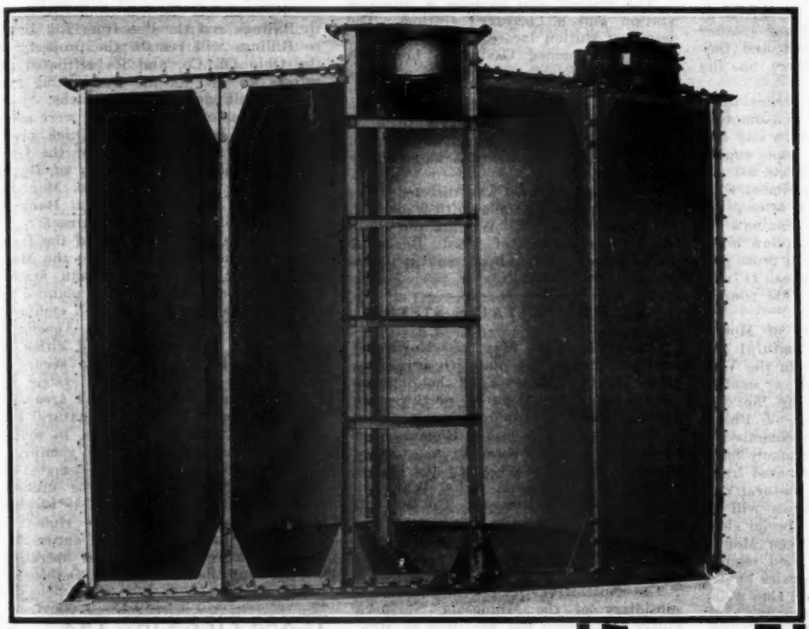
Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur. ..... S.D. 740 ft.

Cree Hoover & Traham's No. 1 Delmar, 330 ft. S line, 330 ft. W line, NW, Sec. 105, Blk. 3, I.&G.N. Sur. .. Drlg. 1,075 ft.

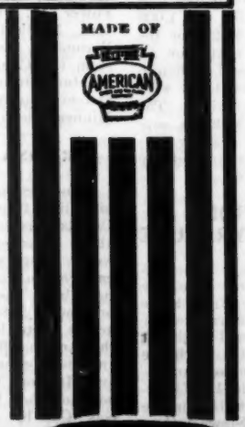
Danciger O. & R. Co.'s No. 1 Barrett, NW cor. S½ NE, Sec. 128, Blk. 3, I.&G.N. Sur. ..... T.D. 3,265 ft; 400 ft. oil in hole; top pay 3,175 ft.

(Continued on Page 123)

IN seeking ways to augment scanty income, don't fail to investigate the money-making features of our VAPOR-PRESSURE lease tanks!



Above is a cross-section view of a Maloney *Vapor-Pressure* Tank, showing the heavy 2-inch angle ties and reinforcements and wide gussets on ties and ladders. These tanks are made of 12-gauge (or heavier) rust-resistant Keystone Copper Steel, painted with high grade aluminum and equipped with valves set at 16-ounce pressure and 2-ounce vacuum. This construction not only protects the oil, but insures the outstanding durability of the tanks.



You must have *efficient* lease storage—or else the temperature variations between the heat of the sun and the cool of the night will cause your tanks to breathe and to waste rich vapors, the loss of which reduces both the gravity and volume of your oil.

Stop these breathing losses—with Maloney *Vapor-Pressure* Tanks—and you eliminate a serious waste of oil.

Remember you sell only the quantity and gravity of oil actually *delivered*.

"Alone in Quality"

MALONEY TANK MANUFACTURING COMPANY

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Distributers at All Principal Petroleum Points

Packed in Steel-Bound Crates for Export

MALONEY

Pipe Line Construction News

TEXAS PIPE LINE CO. FILLING GAPS IN LOOP

HOUSTON, Tex., May 18.—The Texas Pipe Line Co. has completed filling in gaps in looping of its line from San Augustine Station to Port Arthur on its North Louisiana trunk and as soon as its new station building is finished it will be in a position to increase its crude takings from East Texas from 25,000 bbls. to 50,000 bbls. daily.

The company definitely entered East Texas as buyer the past week when, effective May 15, it posted a schedule of prices. The company has been running 25,000 bbls. daily from the field to the Gulf Coast for several weeks but until now has not had an established price. The prices adopted are the same as those posted by Humble, Gulf, Magnolia and other major buyers.

The looping completed includes approximately 50 miles of 10-inch and 8-inch pipe, finishing up those portions on the North Louisiana-Port Arthur trunk from San Augustine Station south which previously had not been looped. This increases the capacity off that section to 50,000 bbls., enough to handle 30,000 bbls. of East Texas oil to be routed that way to the coast. The remaining 20,000 bbls. daily of East Texas oil to be moved to Port Arthur will be run by way of Corsicana and Humble through the North Texas-Port Arthur system.

The company now is rushing completion of four entirely new stations and enlargement of the San Augustine Station. The four new stations will include three 650 horsepower units each and are located at Torkild, Luther, Starr and Rodolfo. The Torkild station is on the new 10-inch 52-mile line recently put in operation from Kilgore Field to Douglass, western Nacogdoches County, on the Corsicana-San Augustine 8-inch line which connects the company's North Louisiana-Corsicana-Humble and Port Arthur trunk system with that of the North Louisiana-Porth Arthur system. The Luther and Starr stations are located east of Douglass and will handle East Texas crude moving westward from the split at Douglass to Corsicana, while the Rodolfo station is between Douglass and San Augustine and will handle crude running eastward to the latter junction.

The company also has established receiving stations on the Kilgore-Douglass branch at Kilgore, Reeds and Joiner.

NORTHERN NATURAL CO. WILL USE SAXET GAS

Natural gas will become available to communities in eastern Nebraska and central Iowa on July 3, according to an announcement made by the Saxet Co., which said it will supply 60 per cent of the requirements of the Northern Natural Gas Co., which was formed last year by United Light & Power, North American Light & Power and Lone Star Gas Corp. to construct the 800-mile pipe line from the Hugoton Field in southwest Kansas.

The new line is designed for a capacity of 180,000,000 feet a day and will represent an investment of approximately $30,000,000 upon completion. A minimum of 60 per cent of the requirements of the Northern Natural Gas Co. will be supplied by the Saxet Co., it is said, from its reserves in the Hugoton Field, comprising about 350,000 acres of gas holdings.

REPUBLIC AWARDED CONTRACT

Republic Iron & Steel Co. has been awarded the contract to supply the North Central Gas Co. with pipe for its lateral lines in its Wyoming-Nebraska natural gas system.

NEW 43-MILE GAS LINE FROM MICHIGAN FIELD

By Paul A. Elliott

MUSKEGON, Mich., May 16.—Laying of a 43-mile 8-inch natural gas pipe line from the Broomfield Township, Isabella County, gas field, located 12 miles west of Mount Pleasant, to Midland, Mich., will be started within two weeks, according to officials of the Consumers Power Co., large Michigan utility company. Rights of way for the $300,000 project already have been obtained and the company has taken up options to purchase gas from the principal producers in the Broomfield Township area.

It is planned to complete the line to Midland during the summer after which the supply will be tested to see if it will be feasible to carry the gas another 20 miles or more to Saginaw and Bay City, larger industrial centers on the Saginaw Bay.

Experience at Muskegon where three 5-mile lines were laid and consumption of as high as 18,000,000 feet a day has practically exhausted the gas supply within less than three years has led the Consumers Power Co. to experiment with the supply in Midland before attempting to make the changeover in Saginaw or Bay City. The new line will follow highways part of the way and will cross private properties in other places. It will be operated at from 100 to 300 pounds pressure to the square inch.

It will not serve the city of Mount Pleasant which will receive natural gas from wells north of the city in the Vernon Township area through a smaller and shorter line to be laid by the National Public Utilities Corp., of Philadelphia, Pa. Both the city commission and officials of the Utility company have approved the terms of the proposed franchise for the distribution of natural gas in Mount Pleasant. The franchise will be submitted to the voters at a special election. A 2-inch gas line between Mount Pleasant and Clare will be used temporarily to speed up the new service and a larger line will be put in later. Gas wells are under contract to the company.

A maximum rate of $1.50 per 1,000 feet for domestic use with $1.20 for the second 1,000 feet and 90 cents for all over 2,000 feet has been agreed. A house-heating rate of 60 cents per 1,000 with a $4 minimum also is provided. The Mount Pleasant Gas Co., which has supplied the community with gas for several years, has been made a unit of the National Public Utilities Corp.

BEGIN CONSTRUCTION OF LINE TO SYRACUSE

SYRACUSE, N. Y., May 16.—Construction of a 6-inch gasoline pipe line from the Pennsylvania-New York State line, near Johnson City, to Syracuse, for the Sun Pipe Line, Inc., will begin at once, said Sim B. Christy, Jr., in charge of the Syracuse office of the company.

Completion of the line, said Mr. Christy, is called for by August 15, in the contract let to the Mitchell Stewart Construction Co. of Pittsburgh, Pa. The line was described as the last link in the underground network spreading out from Marcus Hook, Pa., near Philadelphia.

The Sun Pipe Line, Inc., is a subsidiary of the Sun Oil Co.

REPLACING BILLINGS LINE

Billings Gas Co. is replacing about 4 miles of natural gas line in the corporate limits of Billings, Mont. It will require about four months to complete the work and an expenditure of $40,000. The Billings Gas Co. is a subsidiary of the Ohio Oil Co. John B. McNamara is superintendent of the construction work.

LONGVIEW-SHREVEPORT LINE BEATS SCHEDULE

Completion of the Longview-Shreveport oil pipe line project 11 days ahead of schedule is announced by Ford, Bacon & Davis, Inc., engineers, contractors on the line for the Arkansas Pipe Line Co., a unit of Cities Service Co. The main line is 70 miles in length and has a capacity of approximately 25,000 bbls. a day. Oil was pumped into the line on May 3 and reached Shreveport, La., the following day.

Ford, Bacon & Davis., Inc., employed more than 600 men in the construction of the line. Two crossings with multiple lines were made over the Red River near Shreveport.

The project also includes a pumping station and a "booster" station. The pumping station located near Longview, Tex., was named Caster in honor of Judge H. O. Caster, an executive of Cities Service Co. The first of two 250 horsepower gas engines connected with two plunger-type pumps has been installed and the other will be placed in operation in a few days, officials of Arkansas Pipe Line state.

Work on the line was directed from the recently opened Dallas offices of Ford, Bacon & Davis, Inc. William von Phul, Jr., vice president of Ford, Bacon & Davis Construction Corp., was in active charge.

NORTHWEST STATES SYSTEM

CASPER, Wyo., May 16.—Northwest States Utilities Co. plans to bring gas from its Cut Bank Field holdings to towns in Lake County, northwestern Montana, and has applied for a franchise in the towns of Polson and Ronan. Other communities to be served by a projected line from the Glacier County district are St. Ignatius, Columbia Falls, Whitefish and Kalispell and Missoula. The line will continue to Idaho. The company agrees to have its distributing system in Polson and Ronan within two years after the franchise is granted.

The Northwest States company is a subsidiary of the Minnesota Northern Power Co., which has gas lines in Montana, North Dakota, South Dakota and Wyoming. Its largest system takes gas from the Cabin Creek Field, in eastern Montana, into North and South Dakota and eventually, it is planned, will serve Minneapolis and St. Paul.

ARIZONA LINE PROGRESSES

Construction of the Western Gas Co.'s pipe line from El Paso, 275 miles, to Douglas-Bisbee and Cananea, Mexico, is ahead of schedule. Seven crews are at work. There will be five 800-horsepower gas engine compressors installed along this line. The cost of line will be approximately $6,000,000. Right of way across state land has been granted by the Arizona State Land Board and an amended locense to do business in Cochise and Maricopa Counties, as a foreign corporation, has been granted the Western Gas Co. by the Arizona Corporation Commission. Contract with the Phelps-Dodge Corp. calls for delivery of natural gas through pipe line June 1, 1931.

PETROLEUM SECURITIES LINE

LOS ANGELES, Calif., May 16.—The Petroleum Securities is starting the construction of a 6-inch welded pipe line from Kettleman Hills to Hanford, a distance of approximately 20 miles. No official announcement has been made regarding the company's plans but it is believed possible Petroleum Securities will make a deal of some kind with the Kettleman Hills Gasoline Co., which has a 2,500-bbl. refinery at Hanford.

MONTANA POWER BUYS OHIO'S BOZEMAN LINE

CASPER, Wyo., May 18.—The Montana Power Co. will take over the Ohio Oil Co.'s gas line from the Dry Creek Field in southern Montana to Bozeman, with franchises in towns along the right of way and complete the line and distributing systems. Construction on the Bozeman line and the distributing system at Bozeman was under way when the agreement was reached. The Ohio Oil Co. will be afforded a market for gas it has developed tributary to the Bozeman line or gas discoveries it may make in other parts of the State tributary to any of the Montana Power lines.

The pipe line from Dry Creek Field to the Billings Gas Co. line from Elk Basin to Billings and the line from Elk Basin to Billings will remain the property of the Ohio Oil Co. and its affiliated interests as well as the distributing system in Billings and other towns.

The terms of the agreement were made public by John McFadyen, vice president and western manager of the Ohio Oil Co., and Frank M. Kerr of Butte, Mont., vice president of the Montana Power Co. The line from Cut Bank to Bozeman will be laid by contract.

By the sale of the line and the franchises by the Ohio Oil Co. to the Montana Power Co., the Bozeman system becomes a part of the system planned by the Montana Power Co. which embraces furnishing gas to Butte, Anaconda, Helena and other towns and cities in Montana. It is proposed to secure a part of the supply for this system by drilling wells in the Cut Bank area and the rest from the reserve of natural gas developed by the Ohio Oil Co. in southern Montana and northern Wyoming.

The cost of the system is estimated at about $18,000,000. The pipe ordered from the A. O. Smith Corp. is already arriving at points along the rights of way. It is expected that the entire system will be completed and in operation late in September or early in October of this year.

TEXAS PIPE LINE TAX REJECTED BY SENATE

AUSTIN, Tex., May 18.—The Texas senate at a night session Monday voted down, 21 to 7, an amendment by Senator T. J. Holbrook to the house occupation tax bill that would have levied a 1-cent per barrel tax on all oil runs in intrastate business in Texas. Mr. Holbrook said runs were 300,000,000 bbls. last year and that the pipe line companies earned a total of $64,000,000, or nearly 25 per cent, after charging off depreciation.

The senate temporarily tabled a chain store tax bill that would have levied a tax reaching $250 per unit above 10 on all businesses under common management or ownership in Texas. It was pointed out this would affect all gasoline filling stations operated under chain systems in Texas. Notice was given that a roll call vote would be forced on this chain store tax amendment before the tax measure is disposed of finally.

FORT STOCKTON LINE

FORT STOCKTON, Tex., May 18.—Work of laying the main line of the Big Bend Pipe Line Co. from its wells 22 miles north of Fort Stockton to the city limits has started and officials predicted Fort Stockton will have natural fuel gas for domestic use by July 4. A high-pressure line will be connected with the Pecos Valley wells, with a total volume of 50,000,000 feet daily. The line will be extended to Alpine and Marfa, supplying the distributing system to be installed in those towns.

EAST CENTRAL TEXAS

(Continued from Page 59)

through tubing, total depth 3,750 feet. Roy I. Carter's No. 3 Giles, sand 3,679-3,733 feet, initial production 100 bbls. per hour through casing pinched, total depth 3,733 feet. Cranfill and Reynolds' No. 1 W. P. Keeling, sand 3,747-86 feet, initial production 120 bbls. per hour through tubing, total depth 3,796 feet. Dahman's No. 1 Camp, sand 3,576-86 feet, initial production 50 bbls. per day through tubing, total depth 3,705 feet. H. W. Elliot's No. 1 M. R. Terrell, top sand 3,752 feet, initial production 53 bbls. per hour through 2½-inch tubing choke, total depth 3,764 feet.

Gulf Production Co.'s No. 1 Jernigan, top sand 3,630 feet, initial production 124 bbls. per hour through three-quarters-inch choke, total depth 3,645 feet. Same company's No. 1 Thrash, sand 3,-704-18 feet, initial production 124 bbls. per hour through three-quarters-inch choke, total depth 3,792 feet. Same company's No. 2 Thrash, sand 3,772-92 feet, initial production 97 bbls. per hour three-quarters-inch tubing choke, total depth 3,730 feet. Gulf Coast Oil Co.'s No. 3 Giles, location abandoned. Gulf Production Co. and Smith's No. 4 Peterson, top sand 3,586 feet, initial production 118 bbls. per hour through three-quarters-inch choke, total depth 3,620 feet.

Herring and others' No. 1 Deason, sand 3,692-3,715 feet, initial production 724 bbls. first 24 hours pinched through tubing, total depth 3,727 feet. Houston Oil Co.'s No. 1 Dave Ladd, top sand 3,634 feet, initial production 70 bbls. per hour through eleven-sixteenths-inch choke, total depth 3,665 feet.

Humble Oil & Refining Co.'s No. 20 L. D Crim, top sand 3,586 feet, initial production 69 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,598 feet. Same company's No. 2 Plowman, location abandoned. Same company's No. 3 Plowman, location abandoned. Same company's No. 4 Plowman, location abandoned. Same company's No. 1 M. L. Thompson, sand 3,679-93 feet, initial production 97 bbls. per hour through tubing, total depth 3,706 feet.

Lewis Production Co.'s No. 2 S. B. Willis, top sand 3,578 feet, initial production 124 bbls. first hour through three-quarters-inch choke, total depth 3,-586 feet. Lewis and Selby Oil & Gas Co.'s No. 1 Pegues, top sand 3,610 feet, initial production 110 bbls. per hour through three-quarters-inch tubing choke, total depth 3,653 feet. Captain Lucey's No. 1 Maxwell, sand 3,675-90 feet and 3,702-06 feet, initial production 7,400 bbls. in 24 hours through 1½-inch casing choke, total depth 3,715 feet. Luling Oil & Gas Co.'s No. 2 W. P. Brightwell, top sand 3,596 feet, initial production 120 bbls. per hour through three-quarters-inch tubing choke, total depth 3,636 feet.

John Mabee's No. 2 W. P. Brett, sand 3,702-23 feet, initial production 350 bbls. first 3 hours through tubing, total depth 3,723 feet. Magnolia Petroleum Co.'s No. 2 E. B. S. Florey, abandoned location. Same company's No. 1 Moore, top sand 3,645 feet, initial production 250 bbls. through tubing and casing, open 15 minutes, total depth 3,649 feet. Same company's No. 1 Dick Wells, top sand 3,669 feet, initial production 471 bbls. first hour through twenty-two-sixty-fourths-inch tubing choke, total depth 3,-678 feet. Marine Oil Co.'s No. 3 Bean, top sand 3,578 feet, initial production estimated 60 bbls. per hour through thirty-sixty-fourths-inch choke, total depth 3,630 feet.

McDonald's No. 1 Brightwell, top sand 3,643 feet, initial production 200 bbls. per hour through tubing open, total depth 3,-650 feet. J. R. McMurray's No. 1 Blackwell, sand 3,660-65 feet, initial production 279 bbls. first 40 minutes through three-quarters-inch casing choke, total depth 3,688 feet. Merrick's No. 1 Thrash, sand 3,640-80 feet, initial production 190 bbls. per hour through casing, total depth 3,724 feet. Mid-Kansas Oil & Gas Co.'s No. 2 Moore, sand 3,660-65 feet, initial production 60 bbls. per hour through tubing, total depth 3,665 feet.

Phillips Petroleum Co.'s No. 1 Alford, sand 3,576-94 feet, initial production 120 bbls. per day on pump, total depth 3,608 feet. Pollard's No. 2 Young, shale and broken sand 3,676-3,717 feet, initial production 110 bbls. per hour through 1-inch tubing choke, total depth 3,718 feet.

Republic Production Co.'s No. 1 H. P. Leverett, top sand 3,655 feet, initial production 72 bbls. in 30 minutes through 1-inch tubing choke, total depth 3,685 feet. Robertson Drilling Co.'s No. 1 Deason, sand 3,602-18 feet, initial production 93 bbls. first 24 hours through eleven-sixteenths-inch casing choke, total depth 3,697 feet. Roeser & Pendleton's No. 1 M. Pool, sand 3,680-3,721 feet, initial production 130 bbls. per hour through tubing, total depth 3,721 feet. Rusk County Oil Co.'s No. 1 Robertson, top Georgetown lime 3,685 feet, dry and abandoned, total depth 3,691 feet.

Shaw Oil Co.'s No. 1 Pool, sand 3,-673-3,722 feet, initial production 127 bbls. first 15 minutes open through casing, total depth 3,722 feet. Shaw Oil Co.'s No. 1 Taliaferro, sand 3,658-67 feet, initial production 250 bbls. per hour through casing, total depth 3,720 feet. Sinclair Oil & Gas Co.'s No. 1 Wilson, sand 3,648-52 feet, initial production 261 bbls. per hour through tubing, total depth 3,664 feet. Snowden and McSweeney's No. 1 Bean, top sand 3,623 feet, initial production estimated 150 bbls. per hour open, total depth 3,663 feet. Stanolind Oil & Gas Co.'s No. 5 Terrell, top sand 3,603 feet, initial production 240 bbls. first hour open through tubing, total depth 3,615 feet. Stroube and Stroube's No. 1 Lilly H. Moore, top sand 3,570 feet, initial production 65 bbls. per hour through three-eighths-inch tubing choke, total depth 3,619 feet.

Rusk County Completions

E. M. Jones and others' No. 3-B J. M. Crim, top sand 3,664 feet, initial production 52.5 bbls. in 30 minutes through 1-inch tubing choke, total depth 3,696 feet. E. M. Jones and Houston Oil Co.'s No. 1 B. F. Hindman, top sand 3,636 feet, initial production 180 bbls. per hour through three-quarters-inch tubing choke, total depth 3,650 feet. E. M. Jones and others' No. 1-B D. M. Peterson, top sand 3,610 feet, initial production estimated 50 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,640 feet.

Karona Oil Co.'s No. 3 J. N. Peterson, top sand 3,610 feet, initial production 100 bbls. first hour through three-quarters-inch tubing choke, total depth 3,630 feet.

Golding and Murchison's No. 1 Brock heirs, top sand 3,638 feet, initial production estimated 70 bbls. per hour through eleven-sixteenths-inch choke, total depth 3,663 feet.

LaSalle and Davenport's No. 1 J. L. Kinney, sand 3,610-37 feet, initial production 65 bbls. first hour through three-quarters-inch choke on a 2-inch flow line through casing, total depth 3,647 feet.

Sun Oil Co.'s No. 1 Ed. Barker, top sand 3,738 feet, initial production 45 bbls. per hour through 2½-inch tubing open, total depth 3,748 feet.

Tennant's No. 3 Brooks, sand broken 3,650-3,705 feet, initial production 95 bbls. per hour through tubing, total depth 3,705 feet. E. R. Tennant's No. 4 Brooks, sand 3,700-31 feet, initial production 150 bbls. per hour through tubing, total depth 3,731 feet. Texas Trading Co.'s No. 1 Deason, sand 3,627-53 feet, initial production 96 bbls. first hour through tubing, total depth 3,653 feet. Tidal Oil Co.'s No. 2 Finney, sand 3,640-96 feet, initial production 68 bbls. per hour through 1-inch tubing choke, total depth 3,697 feet. Tidal Oil Co.'s No. 1 Irlon, sand 3,698-3,708 feet, initial production 252 bbls. first 30 minutes, open through casing and tubing, total depth 3,710 feet. Turman Oil Co.'s No. 4, sand 3,682-3,702 feet, initial production 583 bbls. first 12 hours through tubing, total depth 3,702 feet. Turner and Swift's No. 1 S. E. Sanders, sand 3,751-77 feet, initial production 126 bbls. first 30 minutes through tubing, total depth 3,777 feet.

C. E. Upchurch's No. 1 Brightwell, abandoned location.

Woodley Petroleum Co.'s No. 2 Ladd, top sand 3,629 feet, initial production 90 bbls. per hour through eleven-sixteenths-inch choke, total depth 3,644 feet.

Smith County

Sinclair Oil & Gas Co.'s No. 1 Amanda Wiley, water sand 3,861-94 feet, dry and abandoned, total depth 3,894 feet.

The Texas Company's No. 1 Blackwell, top Pecan Gap 2,705 feet, base Pecan Gap 3,090 feet, oil sand 3,698-3,707 feet, initial production 1,640 bbls. first 10 hours open through tubing, total depth 3,711 feet.

Van Zandt County

Imperator Oil Co.'s No. 2 G. W. Carter, abandoned location. Roy Jenkin's No. 1 V. T. Davis, abandoned location. Roy Stumpff's No. 1 Riggs, abandoned location. Pure Oil Co.'s No. 11 J. T. Thompson, initial production on eleven-sixteenths-inch choke, 120 bbls. estimated, total depth 3,941 feet. Pure Oil Co.'s No. 6 F. B. Smith, initial production eleven-sixteenths-inch choke, 240 bbls. estimated, total depth 2,910 feet.

COMPLETIONS IN EAST TEXAS

Anderson County

Humble Oil & Refining Co.'s No. B-3 A. E. Todd, oil sand 3,628-38 feet, initial production 100 bbls. daily on pump, total depth 3,638 feet.

Cherokee County

Rowan and Nichol's No. 1 Owsley, dry and abandoned, total depth 4,226 feet.

Gregg County

Arkansas Fuel Oil Co.'s No. 4-A F. K. Lathrop, oil sand 3,530-54 feet, initial production 150 bbls. per hour on 1-inch choke, total depth 3,555 feet.

Bridwell and others' No. 1 D. L. Magrill, oil sand 3,612-54 feet, initial production 87 bbls. per hour on eleven-sixteenths-inch choke, total depth 3,654 feet.

Crump and Hanagan's No. 2 Dallas Caldwell, oil sand 3,527-48 feet, initial production 241 bbls. per hour through tubing, total depth 3,558 feet.

F. H. E. Oil Co.'s No. 1 Julia Flemister, oil sand 3,601-38 feet, initial production 140 bbls. per hour on eleven-sixteenths-inch choke, total depth 3,638 feet.

Lucey Petroleum Corp.'s No. 1 Christian, oil sand 3,564-88 feet, initial production 113 bbls. per hour on eleven-sixteenths-inch choke, total depth 3,588 feet.

Mid-Kansas Oil & Gas Co.'s No. 1 J. J. Castleberry, oil sand 3,592-3,604 feet, initial production 88 bbls. in 15 minutes, total depth 3,604 feet.

Roeser and Pendleton's No. 1 J. R. Fenton, oil sand 3,594-3,616 feet, initial production 130 bbls. on eleven-sixteenths-inch choke, total depth 3,617 feet. Rush Brothers and others' No. 1 W. M. Harley, oil sand 3,582-3,616 feet, initial production 97½ bbls. per hour on eleven-sixteenths-inch choke, total depth 3,616 feet.

Skipper and Tibbett's No. 1 J. C. McKinley, oil sand 3,619-3,639 feet, initial production 126 bbls. per hour on eleven-sixteenths-inch choke, total depth 3,639 feet. Stanolind and Simms Oil Co.'s No. 1 Thad Snoody, oil sand 3,504-21 feet, initial production 450 bbls. per hour open, total depth 3,522 feet.

Whittle and Cavanaugh's No. 1 Ben Watson, top sand 3,586 feet, initial production 180 bbls. per hour through 1-inch choke on tubing, total depth 3,620 feet.

Daniels and Patton's No. 1 J. A. Knowles, top sand 3,536 feet, initial production estimated 800 bbls. per day flowing by heads, total depth 3,586 feet.

Gulf Production Co.'s No. 2 Birdsong, top sand 3,569 feet, initial production 124 bbls. per hour through three-fourths-inch tubing choke, total depth 3,591 feet.

Pat Hudson's No. 1 W. Smith, top sand 3,588 feet, initial production 240 bbls. in 15 minutes, total depth 3,612 feet.

Mid-Kansas Oil & Gas C.o's No. 1 Barton, top sand 3,616 feet, initial production 112 bbls. per hour through three-fourths-inch tubing choke, total depth 3,630 feet.

Republic Production Co.'s No. 1 Ben Watson, top sand 3,573 feet, initial production 180 bbls. in one hour through three-fourths-inch tubing choke, total depth 3,631 feet.

Wainwright and West's No. 1 Ben Watson, top sand 3,577 feet, initial production 257 bbls. per hour through 1-inch tubing choke, total depth 3,615 feet.

Woodley Petroleum Co.'s No. 1 Laura Walker and others, oil sand 3,587-3,622 feet, initial production 200 bbls. per hour on three-fourths-inch choke, total depth 3,624 feet.

Morris County

Helm's No. 1 Connor, dry and abandoned, total depth 4,015 feet.

Daily average production week ending May 16:

Boggy Creek	2,510
Cedar Creek	33
Currie	259
Hill County	30
Mexia	3,306
Nigger Creek	130
Powell	4,317
Richland	115
Van	44,035
Wortham	462
Total	55,197
East Texas Fields—	
Kilgore	115,400
Longview	48,550
Joiner	92,500
Total	256,450
Total East Central Texas	311,647
Week ended May 9	322,771
Difference	11,124

OIL PURCHASING AGENTS TO MEET AT TORONTO

The sixteenth annual convention of the National Association of Purchasing Agents will be held in the Royal York Hotel, Toronto, Ontario, from June 8 to 11. The organization is international in scope, having local chapters at Hamilton, Montreal, Toronto, Vancouver and Winnipeg. Leading economists and business authorities are on the program.

Buyers for different kinds of industries are segregated into groups which function throughout the year and hold group sessions during conventions. Purchasing agents for oil companies, for instance, have what is known as the oil company buyers group. Two sessions of this group are scheduled for Toronto. Material standards of the American Petroleum Institute will be discussed from various angles. W. R. Brown, Tulsa purchasing agent of the Mid-Kansas Oil & Gas Co., is chairman of the oil company buyers group.

Other members of the Tulsa association on the official program are: G. A. Tompson, purchasing agent, Empire Companies, Bartlesville, Okla., vice president of District No. 2, and a member of the national executive committee, who will preside at the general convention session on Wednesday, June 10; H. M. Cosgrove, secretary-treasurer, who as chairman, will preside at the sessions of the group of editors of the various association publications. Other oil company buyers from Tulsa and the Southwest will participate in convention deliberations.

VACUUM ADVERTISING CHANGE

George N. Walker, formerly in charge of advertising for the tire division of the United States Rubber Co., has been appointed advertising manager for Vacuum Oil Co., succeeding Eben Griffiths, whose duties as vice chairman of the lubricating committee and his increasing activities in other departments made necessary the appointment of Mr. Walker to take over his responsibilities as the active head of the advertising department.

Paul F. Wiggin continues as assistant advertising manager for the company, Curtis B. Smith as advertising manager of the gasoline department, and Harold J. Gane as foreign advertising manager.

G. W. PATTERSON DEAD

BRADFORD, Pa., May 16.—George W. Patterson, aged 87, retired oil producer and contractor, died Thursday at his home in Degolia.

Mr. Patterson was born in Fredonia, N. Y., March 13, 1844, and had been a resident of this vicinity for the past 50 years, where he had engaged in the oil business as a producer and contractor. He retired 12 years ago.

Bottom Choke Decreases Gas-Oil Ratio

Lowers Delivery Pressures and Permits Control of Discharge Velocities, Thereby Increasing Producing Efficiency

H. C. Otis
Southern States Co., Shreveport, La.

Bottom hole choking is being tested in wells in the Yates and Raccoon Bend Fields of Texas, the Oklahoma City and Seminole Fields of Oklahoma and the Hobbs Field of New Mexico. The results of these tests, which are being conducted jointly by the Southern States Co. of Shreveport and an operating company in each of the fields mentioned, will undoubtedly be watched with considerable interest by both production and engineering departments.

The purpose of these tests is to determine the increased efficiencies to be obtained by adjusting flow velocities within the tubing string. It is thought that by increasing flow velocities, gas-oil ratios in many instances can be lowered, and that in cases of head wells the heading can be largely and at times entirely eliminated and production often materially increased.

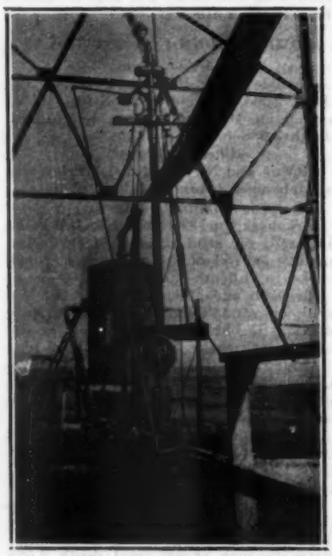
Large diameter tubing together with restricted production under proration has resulted in high tubing delivery pressures and in consequent extremely low tubing flow velocities—delivery velocities of considerably less than a foot per second being common in several fields. Slippage, with consequent high gas-oil ratios, is bound to follow at such inefficient low velocities. Stop cocking has been resorted to in some fields as one method of increasing flow velocities, but it has not met with general approval. Decreasing tubing diameter is another method of accomplishing the same thing, but, while undoubtedly good practice, since it cannot usually be accomplished without killing the well, the added expense involved is not justified in these days of low priced oil if a cheaper and equally efficient method is available.

Decrease of Gas-Oil Ratio

With surface chokes, a large part of the expansion of the gas takes place at the outlet of the choke, and an enormous amount of energy is wasted between the choke and trap. Bottom hole choking causes the expansion of the gas in the lower portion of the string, much of the energy which is normally lost between the surface choke and the trap being used in the lifting of the oil. The comparatively high pressure at the inlet of the surface choke, with the resulting small volume occupied by each cubic foot of gas, is the cause of the inefficient low flow velocity characteristic of several fields today. Choking in the lower portion of the string and delivering the well's allowable production at the surface at or slightly above atmospheric pressure causes each cubic foot of gas which is carrying the oil to occupy a larger space than that occupied under the higher delivery pressure, and consequently to increase flow velocity. As an instance of the above, in one well in which these tests are being conducted, delivery pressure through a surface choke was 550 pounds, with delivery velocity at the surface less than 1 foot per second. After installing a bottom hole choke, delivery pressure at the same rate of production was decreased to 10 pounds, and delivery velocity raised to about 20 feet per second with a resulting decrease of approximately 40 per cent in gas-oil ratio.

Lowered Delivery Pressure

It is, however, sometimes possible, through bottom hole choking alone, to raise inefficient low flow velocities to equally inefficient—or possibly still more inefficient—high flow velocities. In another of the wells under test, delivery velocity was raised from about 1 foot per second to over 60 feet per second through lowering the delivery pressure from 1,200 pounds to 7½ pounds. The lowered delivery pressure resulted in much safer operating conditions and gas-oil ratio was decreased almost 20 per cent, but it is not thought that the ratio secured is as low as is possible, since the tubing velocity of 60 feet per second is too high to give maximum efficiency. A surface back pressure of about 30 pounds, by causing the gas as delivered to occupy a volume of only one-sixth as large as that occupied under the 7½ pounds



Lubricator for running 3-inch choke used on I.T.I.O. Co.'s No. 2 Farley-Fuzzell well, Oklahoma City Field—Otis method.

delivery pressure, should decrease the delivery velocity from about 60 feet per second to about 30 feet per second—at which velocity a further saving in gas is anticipated.

Combination of Chokes

In some high gas-oil ratio wells, bottom hole choking alone may not produce the most efficient velocities, since delivering the well's prorated production at atmospheric pressure may—as in the case of the well just mentioned—result in a velocity so high as to be as inefficient as the low velocity accompanying surface choking alone. But, through the combined use of a bottom hole choke and a low pressure surface choke, tubing flow velocities can within certain limits be regulated almost at will for any rate of oil production. This regulation of tubing flow velocities for any rate of oil production by means of both a bottom hole choke and surface choke is accomplished by varying the delivery pressure over the range of only a few pounds with the surface choke provided the delivery pressure is close to atmospheric pressure. This varying of a few pounds in delivery pressure—if that delivery pressure is close to atmosphere—will have a negligible direct effect on velocity through the sand, but will have a marked effect upon velocity within the tubing. As an example, raising delivery pressure from atmosphere to 15 pounds above atmosphere will, provided a bottom hole choke is used, have but slight direct effect upon the sand, but will approximately double delivery velocities within the tubing. Radically varying this delivery velocity through the application or removal of a few pounds surface pressure may result in the securing of a more efficient velocity which in turn will, through the lowering of the gas-oil ratio, have an indirect effect upon velocity through the sand. This combination of bottom hole choking plus surface choking at a few pounds above atmosphere provides an extremely sensitive control of tubing flow velocities independent of sand velocities.

Controlling Flow Velocities

A similar sensitivity of control over tubing flow velocities without proportionate increase or decrease in the rate of oil production cannot be secured where the delivery pressures are high, as is customary when surface chokes alone are used. If delivery pressure in a well equipped with both bottom hole and surface choke is 10 pounds, and it is desired ot lower the flow velocity by 25 per cent in hopes of thus securing a lower gas-oil ratio, it is necessary only to raise the delivery pressure approximately 6 pounds by means of the surface choke. This slight increase in pressure will not directly affect the velocity in the sand, but will materially affect the velocity within the flow string. If, however, that well had been equipped with a surface choke alone, delivering the same quantity of oil at the same velocity, but at a pressure of 500 pounds, it would be necessary, in order to lower the delivery velocity by the same 25 per cent, to raise the delivery pressure approximatetly 130 pounds. This obviously could not ordinarily be done without materially changing the velocity through the sand and throwing the well completely off its production schedule.

Wells which are heading present a slightly different problem. In these wells the situation is largely the reverse of the high gas-oil ratio wells—or those wells in which the rate of entry of gas into base of the tubing is greater than necessary to raise the oil at its rate of entry. In head wells the rate of entry of oil into the tubing immediately after a head has taken place is higher than the rate of entry of gas in sufficient quantities to raise that oil. As the level of oil within the tubing rises due to its hydrostatic head, its rate of entry decreases, giving the head of gas which has been accumulating beneath the column of oil an opportunity to "catch up." After the column of oil has been lifted from the well, the head of gas is dissipated, and the accumulating process starts all over again.

Bottom hole choking in head wells serves, by maintaining a more constant bottom hole pressure, to retard the comparatively rapid rate of entry of oil which normally overbalances the gas immediately after a head, which in turn makes it possible to utilize the available gas more efficiently through expansion. If this limiting the rate of entry of oil to the effective rate of entry and expansion of gas can be properly regulated, steady flow will result and the loss of gas which normally accompanies each head eliminated. This has been accomplished in some of the tests mentioned and in some instances production has been materially increased. In one instance, the bottom hole choke was set at various depths, with results that are extremely interesting but as yet not fully understood.

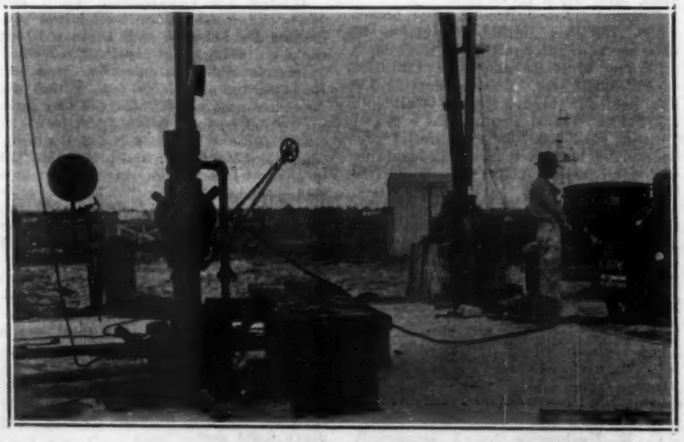
A Recent Development

The choke being used in these tests is one recently developed by the Southern States Co. This choke is run and pulled under pressure on a Halliburton steel line, and may be set at any desired depth in the tubing string. The bean is of fixed diameter, but it is a simple matter when it is desired to change diameter to pull the choke, to insert in the choke a bean of the new diameter and to rerun and set at any desired depth. In the Yates Field of Texas, changes in bean diameter or choke depth have been accomplished by experienced crews in an hour's time, including time for moving to the well, rigging up, pulling of the choke, changing bean, rerunning and setting. In the Oklahoma City Field, where, because of the higher pressures, more time is required for the rigging up operations, about half a day for a crew of two or three men is necessary for effecting a change. This removable feature permits removing the choke from the well when potentials are to be taken. It can be used in ordinary strings of tubing already in a well. In the Oklahoma City Field the same choke has been set in 3-inch tubing in five different wells. In one well at Yates, five bean diameters have been tested. In another well at Yates, the choke has been set at six different depths. Flow through the tubing is shut in during the running and pulling, so that well volume or pressure have but little effect on these operations. The 6,500-foot depths at Oklahoma City were handled almost with the same ease as the shallower depths in Yates.

Not a Cure-All

It is not expected that the addition of bottom hole choking to present production methods is going to solve all flow problems. Reductions in ratios cannot always be expected in high gas-oil ratio wells whose normal tubing flow velocities are at or above the efficient range, though

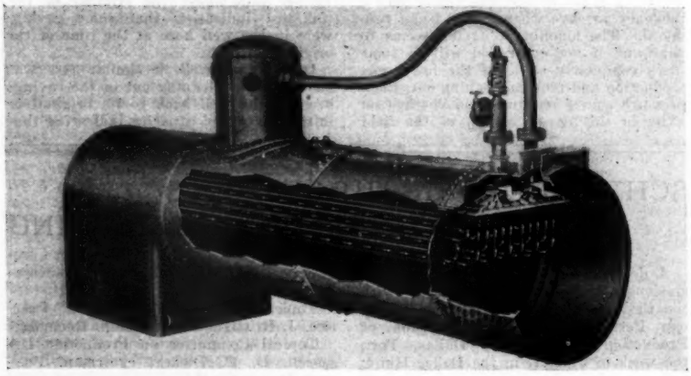
(Continued on Page 119)



Pulling a 2-inch choke out of a well in the Raccoon Bend Field, Texas.

Dependability Is *Priceless*

IN any drilling operation there are critical times, such as drilling into a gas pocket or into a formation which caves in, when constant mud pressure from the mud pump is almost priceless.



Under these emergency conditions, superheated steam to the mud pump is of vital importance. It permits instant response and full capacity, allowing the operator to meet a critical situation which might otherwise prove a costly emergency.

Consult the supply companies representing these leading boiler manufacturers about Elesco superheaters:

The Broderick Company, Muncie, Ind.
Donovan Boiler Works, Inc., Parkersburg, W. Va.
Farrar and Trefts, Inc., Buffalo, N. Y.
Kewanee Boiler Corp., Kewanee, Ill.
Lucey Manufacturing Corp., Chattanooga, Tenn.
Oil Well Supply Co., Oil City, Pa.
The Titusville Iron Works, Titusville, Pa.

Dry steam, free from all condensation losses, is provided by Elesco superheaters in oil-country boilers. This is accomplished by adding heat to the steam—heat which must be radiated before condensation starts.

Constant mud pressure is but one of the many advantages of Elesco superheater boilers which has been repeatedly proved under actual service conditions. • • •

Data on complete tests under actual operating conditions are given in Bulletin T-20, sent on request.

THE SUPERHEATER COMPANY

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Peoples Gas Building
CHICAGO

ELESCO

Union Trust Building
PITTSBURGH

A-605

THE SUPERHEATER COMPANY,
60 East 42nd Street, New York, N. Y.
Gentlemen:
Please send me a copy of Bulletin T-20, "The Elesco Superheater for Oil-Country Boilers."

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OG 5-21-31

Back Pressure Curves Have Many Uses

Quantity of Natural Gas Conserved and Back Pressure Maintained in Formation at All Times Among Facts Shown

By Max Watson
Gas Engineer, Canadian River Gas Co., Amarillo, Tex.*

The use of back pressure curves as a method of gauging the open flow or maximum capacity of gas wells has been well defined and is obviously a practical and economic advancement along this line. The amount of the natural gas conserved and the back pressure maintained on the gas formation at all times are a feature of this method which alone is of incalculable value. This is one of many applications to which these curves are adaptable and a few of these applications will be outlined.

The amount of gas available from the gas wells at various back pressures is definitely determined from the back pressure curves and any change in this quantity will show up in the regular back pressure tests. This information can be used to advantage in the design of any gathering system or in determining the pressure and amount of gas available at the section header of the compressing station or at any point on the system.

In designing a gathering system, the sizes of lines to be constructed to various points in the gas field have a direct bearing on the upstream and downstream pressure and the quantity of gas to be delivered through these lines. The downstream pressure on any line can be determined approximately by calculating from a point where the condition of load and pressure is known such as the designed suction pressure and capacity of the compressing station. The compressing station and trunk line capacity is determined from a carefully estimated load demand on the whole system and these same factors can be used in specifications for the gathering system when the inlet pressure on the various field lines can be determined at the wells, as by the back pressure curves. There are other factors such as depletion and field extensions which must be taken into account but these can be more accurately determined when the actual operating peculiarities of a gas field are known before construction is commenced. As the back pressure method is further developed and more fields covered by the tests, it is probable that a comparison of initial well curves from various fields will indicate to a degree just what may be expected from the field throughout its life.

Additional Compressor Capacity

The back pressure curves have been used in the Texas Panhandle in determining whether or not additional compressor capacity was required to take care of an expected winter peak load. The suction pressure and corresponding capacity of the main line compressors was known and it was only a matter of calculating by a pipe line flow formula, the pressure drop to be expected in each gathering line. In this specific application there were 40 wells connected to the system through lines varying in size from 22 to 2-inch. Our company has established the practice of producing gas from the wells so as to maintain a back pressure of not less than 350 pounds in a major portion of the field. With these facts in hand it was comparatively simple to calculate the capacity of the gathering system and to determine that there was approximately twice the amount of required gas available. By drawing a map of the field lines and plotting, on co-ordinate paper, the pressures corresponding to the various points in the system, a comprehensive picture of the whole problem was outlined. This plan can be followed out each year, thus indicating the effect on the gathering system of the available gas decline with the decline in the open flow of the gas field. This method will, in the future, be valuable in determining the available gas from the various leases where a certain percentage of the total load must be obtained. Since the gas available to each branch gathering line is known after each test, a shortage of gas can be anticipated in sufficient time to take the necessary steps to augment the supply or enlarge the gathering system.

Studying Behavior of Wells

The back pressure curves are, further, a practical method of studying the conditions and behavior of gas wells under operating conditions. A concrete example of this application is shown by the change in the characteristics of the curves as experienced on a few wells in the Texas Panhandle. There is a section of the field where the formation overlying some of the gas strata has a tendency to cave when gas is being produced. The amount of caving seems to vary and if not controlled will in some cases completely shut off the lower gas production and require cleaning out. Back pressure curves obtained and checked on wells in this cavey section of the field indicate the accumulation of cavings in the well bore immediately by the apparent change in the characteristics of the curves.

One well in this section has been blown three months prior to the first back pressure test made on the well. A check test made three months after the first test indicated that the well capacity had fallen off approximately 20 per cent. The well was immediately blown and a considerable amount of cavings blown out. The well was then shut in for about two weeks and a third back pressure test made on it. The third test indicated that the well capacity had been increased approximately 35 per cent by the cleaning out of the cavings. The capacity from the third test was approximately 10 per cent above the original or initial test indicating that some cavings were in the well bore at the time of the original test.

On another well, a similar test was made and the cleaning out of the cavings brought the well back to its original or initial curve and capacity indicating that there were no cavings in the well bore when the initial test was made but had accumulated between test dates.

From Production Standpoint

These observations indicate the value of the back pressure curves from a production standpoint. This condition has complicated the determination of the open flow from the back pressure curves, since each back pressure test results in a different curve where cavings have accumulated in the well bore. However, this information is valuable and may lead to reconditioning of these wells when it becomes necessary to obtain more gas from them.

The rock pressure on this well had declined from 312 pounds on June 26, 1930, to 291 pounds on May 4, 1931. No gas had been taken from this well during that time and the decline was due to dissipation by gasoline plants and carban black plants in the vicinity. The characteristics of the curve obtained did not change between tests but the absolute open flow obtained from the curve declined from 39,000,000 feet to 36,000,000 feet. From a study of this curve, it is apparent that the open flow of this well will be approximately 4,700,000 feet when the rock pressure declines to 50 pounds assuming that the conditions in the well and producing formation will not change. This use of the curves will be valuable in estimating the rock pressure at which the wells must be abandoned as unprofitable gas producers.

This method of well gauging is in the early stages of development in the Texas Panhandle and certain peculiarities and deviations from the straight line relation are not thoroughly understood. Out of 60 wells tested by this method, 50 gave the straight line relation. Those wells which did not give a straight line relation may be explained by some peculiarity in completion, such as the bottom part of a string of casing left in the hole and extending above the gas producing level or the gas had been drowned out or mudded off during the drilling, or other such irregularities which have not been taken into account in the back pressure tests.

The unconsolidated producing formation peculiar to the Texas Panhandle, although practically all porous lime, presents another problem. It has not been definitely determined that these separate strata are not directly connected throughout the gas field. The effect of this unconsolidated condition has not as yet complicated the back pressure tests although, as the field is depleted, may present difficulties in nonuniform depletion of the different strata. That is, one gas stratum, due to uneven distribution of gas withdrawal, may have a lower rock pressure than the other strata in the same well bore. This will result in leakage or drainage from the higher to the lower pressure strata and complicate the back pressure tests. The back pressure tests are based on a uniform change in rate of delivery with the change in back pressure and different strata producing as the back pressure is decreased below the rock pressure of that strata will change the characteristics of the curves.

The back pressure method of testing gas wells in the Texas Panhandle was started June, 1930. It was necessary to calibrate a 4-inch critical flow meter to measure gas deliveries up to 40,000,000 or 50,000,000 feet per day in order to obtain the low back pressure points which are necessary for an established curve. It is planned to continue this work and investigate the possibility of determining the porosity or permeability of the gas producing formation from these curves and endeavor to solve other problems encountered.

*Before Natural Gas Department, American Gas Association, Memphis, Tenn., May 11-14.

SCHEDULE OF GROUP SESSIONS AT A.P.I. DALLAS MEETING

A detailed tentative schedule of group sessions to be held in connection with the first midyear meeting of the American Petroleum Institute's Division of Production scheduled for Dallas, Tex., the week of June 1, in the Baker Hotel, follows:

Monday, June 1

10 a.m.—Special subcommittee on derricks, Hu M. Harris, chairman, English Junior Room.

Special subcommittee on welded tanks, G. Raymond, chairman, English Room.

8 p.m.—Correlating committee on gauges and gauging practices, H. W. Fletcher, chairman, Banquet Room No. 2.

Tuesday, June 2

9 a.m.—Belting engineers' subcommittee, D. L. Trax, chairman, Banquet Room No. 3.

Standard Rigs and Derricks, W. W. Fondren, chairman, English Junior Room.

Oil Country Tubular Goods, John R. Suman, chairman, Banquet Room No. 1.

Rotary Drilling Equipment, E. J. Nicklos, chairman, Banquet Room No. 2.

Pumping Equipment, T. E. Swigart, chairman, Banquet Room No. 4.

Steel Tanks for Oil Storage, G. O. Wilson, chairman, English Room.

9:30 a.m.—Measuring, Sampling and Testing of Crude Oil—Group 3 Pipe Lines, and Correlating Committee, Room 324.

10 a.m.—Oil Field Belting, Banquet Room No. 3.

Fire Prevention in Oil Fields, R. W. Pack, chairman, Room 334.

2 p.m.—Accident Prevention in Oil Fields, George F. Prussing, chairman, Room 334.

Corrosion of Oil Field Equipment, E. P. Bly, chairman, Room 332.

Topical Committee on Production Research, D. E. Dickey, chairman, Room 328.

8 p.m.—Disposal of Production Wastes, V. L. Martin, chairman, Room 334.

Topical Committee on Prime Movers, D. L. Trax, chairman, Room 320.

Topical Committee on Metallurgy of Oil Field Equipment, H. W. Fletcher, chairman, Room 326.

Topical Committee on Production Practice, W. W. Scott, chairman, Room 330.

Topical Committee on Drilling Practice, J. R. Gignoux, chairman, Room 328.

Topical Committee on Production Research, D. E. Dickey, chairman, Banquet Room No. 1.

Joint Session—Standardization Central Committee and Special Committee of General Committee, J. Edgar Pew, chairman, Banquet Room No. 3.

Wednesday, June 3

9 a.m.—General Session—Production Practice, Crystal Ball Room.

12 noon—Luncheon, Committee on District Activities, J. R. McWilliams, chairman, Banquet Room No. 2.

2 p.m.—General Session—Current Production Situation, Crystal Ball Room.

8 p.m.—Open Meeting—Committee on Drilling and Production Practice, Crystal Ball Room.

Thursday, June 4

9:30 a.m.—Committee on Unit Operation.

General Session—Activities of Standing Committees, Crystal Ball Room.

1:30 p.m.—General Session—Drilling Practice, Crystall Ball Room.

2 p.m.—Division of Production, General Committee, R. R. Penn, chairman, Banquet Room No. 3.

The registration and information desk and press headquarters will be in the Lounge Room on the mezzanine floor.

On Tuesday, June 2, at 9:30 a.m., the Institute's board of directors will assemble in the Texas & Pacific Railroad station at Longview, Tex., and at 10 a.m., will leave by motor car for an inspection of the East Texas and Van oil fields returning to Dallas in the evening. On Friday, June 5, the board will hold a meeting in Fort Worth, Tex., the session to convene in the Longhorn Room No. 1 of the Texas Hotel at 10:30 a.m.

No sessions of the Rig Iron, Cable Tool, Wire Rope and Manila Cordage, and Boiler Committees of the A.P.I.'s Division of Production groups will be held because of the small volume of pending business.

Tentative dimensional specifications for standard bolted tanks have been prepared by the Committee on Standardization of Steel Tanks for Oil Storage and

(Continued on Page 151)

Status of the Liquefied Gas Industry

Intercompany and Outside Competition Force Its Conservative Development Despite Rapid Increase in Sales

By G. G. Oberfell
Phillfuels Co.*

LARGER PLANTS TO SUPPLY PRODUCTS

In this review of the early development of the liquefied petroleum gas industry and the discussion of the present economic problems facing natural gasoline plant operators, G. G. Oberfell traces the favorable growth in the sale of its products when compared with the growth of sales among other new industries, but also issues a warning against entering the field without full appreciation of the outside competition as well as the inter-company competition present.

Because of the trend in refining whereby the natural gasoline plant operator is compelled to manufacture the more stable products, a greater volume of those fractions suitable for use as "bottled gas" is being made available. For this reason, there promises to be an ample supply of this type of fuel but because of the high cost of the added plant equipment needed and the control required, it is likely that only the larger units will find it economical to produce. A bibliography of articles on this subject is included.

The present status of the liquefied petroleum gas industry is a subject of intense interest to all natural gasoline manufacturers because it represents developments that are rapidly making it possible for the natural gasoline manufacturer to market his products directly to the ultimate consumer. The technical and operating details of the ramifications of the various liquefied petroleum gas activities are so great that they cannot be adequately treated within the scope of this paper. In order to do justice to such an assignment it would be necessary to write a book as voluminous as that having to do with the other phases of the natural gasoline industry. Many articles have been published dealing with the various technical developments of this comparatively new industry. This paper will be confined to a general discussion of the subject, a brief abstract of the more important articles and to problems confronting the industry at the present time. A bibliography is attached for the purpose of serving as a ready reference to the available literature.

Evidently you are all primarily interested in the actual business conditions within the industry and their effect upon its future economic development. Since these conditions are not generally known except to the well initiated and since there are comparatively few producers showing active interest at present in the development of these new markets, an attempt will be made to present facts and forecasts in a lucid and unbiased manner. This last statement is offered in view of the additional fact that it appears that many of the people most vitally interested in the liquefied petroleum gas business and in kindred or competitive industries have not made a very close study of their economic problems.

Early Developments

As a general definition, liquefied petroleum gases may be described as those hydrocarbons or hydrocarbon mixtures which are gases at normal temperatures and pressures and which are susceptible of liquefaction under moderate pressures at normal temperatures. Chemically speaking, liquefied petroleum gases are composed of propane, propylene, butylene, and butane, or various mixtures of two or more of the hydrocarbons. Practically speaking, liquefied petroleum gases are those gases from the petroleum industry which are easily liquefied under moderate pressure at normal temperature.

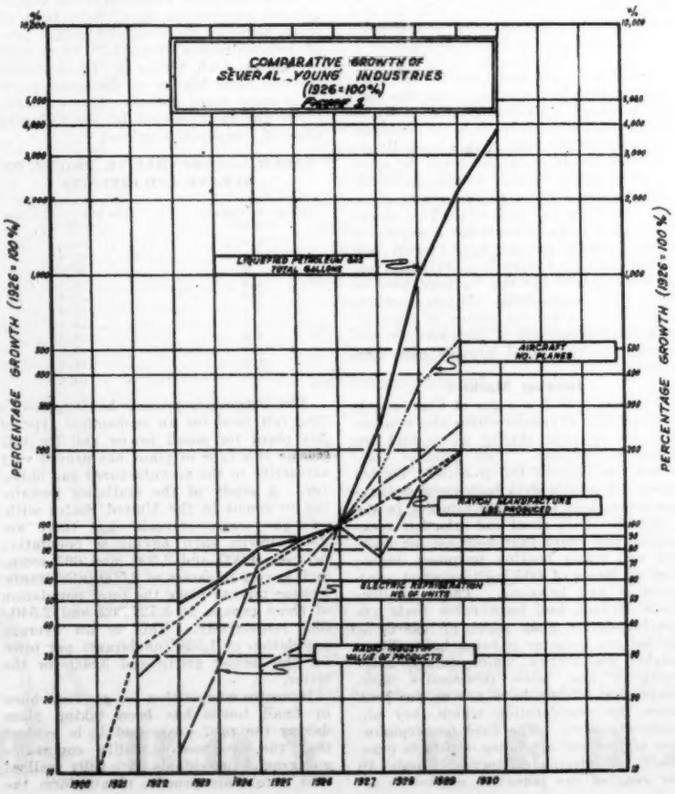
The use of liquefied petroleum gases for heating and lighting purposes has been known for about half a century. Benjamin T. Crew mentions the manufacture of this product in "A Practical Treatise on Petroleum," published in 1887 by Henry Carey, Baird & Co., London, England. Pintsch gas, a compressed but not a liquefied gas, was made by cracking oil and was the forerunner of Blaugas, which was named after its inventor, Hermann Blau of Augsburg, Germany. Blaugas was apparently the first commercially important liquefied petroleum gas of authentic record, since U. S. Patent No. 862,383 applied for in 1904, dwells at lengths upon the advantages of the liquefied gas as compared with the compressed nonliquefied gas.

Among the early pioneers of the industry who contributed materially to its conception or who spent considerable time, effort, and money in attempting its development may be mentioned the following as being probably the most outstanding: Hermann Blau, Franklin P. Peterson, A. N. Kerr and Frank Y. Locke.

A. N. Kerr, an engineer with the Riverside Oil Co., became interested in the possibilities of the commercial development of liquefied petroleum gases in 1910. Liquefied petroleum gas was produced under his supervision at the Happy Hollow natural gasoline plant at Sistersville, W. Va., during the latter part of the same year. Kerr contributed several patents pertaining to the industry. He is at present vice president of the Rockgas Products Co. and president of the Imperial Gas Co., which are marketing liquefied petroleum gases.

Franklin P. Peterson, whom you all know and admire, was an engineer with the Bessemer Gas Engine Co. at the time that liquefied petroleum gases were first receiving attention in this country. Peterson, in collaboration with Kerr, Burrell and Snelling, conducted many experiments during 1910 and 1911 pertaining to the manufacture and uses of liquefied petroleum gases from natural gas. Peterson's investigations were of considerable value in the development of the compression process for natural gasoline recovery and for this reason he is frequently referred to as the "daddy of the natural gasoline industry."

From a business point of view, Frank Y. Locke, president of the Northwestern Blaugas Co., probably deserves more credit than any other pioneer. The Northwestern Blaugas Co.'s plant was built in 1912 and manufactured liquefied gases under a process which subsequently proved to be much more costly than that encountered in the manufacture of these products from natural gas. The process used by the Northwestern Blaugas Co. consists of cracking oil in retorts at atmospheric pressure at about 1,100° F. The gases resulting from this oil cracking process were treated by a compression process to recover the liquefied petroleum gas constituents. The liquefied petroleum gas, which contained large quantities of ethane and ethylene, had a vapor pressure of more than 1,000 pounds per square inch at normal temperatures. Despite the inherent economic disadvantage of cracking oil merely for the purpose of securing a gas from which liquefied petroleum gases could be manufactured, Mr. Locke through remarkable sagacity and exceptional business ability, was able to operate his company continuously from 1912 to 1928, when the plant was shut down due to the fact that recent developments in the liquefied petroleum gas industry made it possible for his company to purchase liquefied petroleum gases in wholesale tank car quantities at a lower cost than that experienced in the operation of his own plant. The Northwestern Blaugas Co. is still in business at the present writing and is the oldest existing pioneering company.


COMPARATIVE GROWTH OF SEVERAL YOUNG INDUSTRIES
(1926=100%)
PERCENTAGE GROWTH (1926 = 100%)
LIQUEFIED PETROLEUM GAS TOTAL GALLONS
AIRCRAFT NO. PLANES
RAYON MANUFACTURE LBS. PRODUCED
ELECTRIC REFRIGERATION NO. OF UNITS
RADIO INDUSTRY VALUE OF PRODUCTS
1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930

The first Blaugas appearing in this country was that imported in 1907. The first demonstration and commercial Blaugas plant in the United States was built and put into operation in 1908. While Blaugas was made from the liquifiable gaseous constituents obtainable from one gas resulting from an oil cracking process, it was long realized that natural gas was the cheapest source of liquefied hydrocarbon gas manufacture. It has also been long realized that in the manufacture of gasoline from natural gas, fractions are extracted which are suitable for the production of liquefied petroleum gases. Until recent years, large scale production of liquefied petroleum gases was uneconomical due to the facts that the supply of natural gasoline was widely scattered and the extraction processes relatively inefficient. Due to the increased supply of raw natural gasoline, the chief source of liquefied petroleum gases, and due to improvements in the technology of natural gasoline manufacture, it has been found necessary to market more stable grades of natural gasoline. The result has been that the volatile fractions removed from the raw natural gasoline have augmented the immediately available supply of raw material suitable for the manufacture of the liquefied petroleum gases.

Prior to the year 1926 the industry was looked upon and generally referred to as a "peanut business," and as far as marketed quantities of liquefied petroleum gas are concerned all of the companies selling these products still are peanut vendors. However, certain definite accomplishments have been made during recent years, which give promise of really large scale marketed production. As late as 1928 the butane-air process for small town plants was an idea unproven by extended commercial usage. Tank car shipments of industrial gas were unknown save in the imagination and belief of those few who have had faith in the developments of this huge potential market. Many of the early liquefied petroleum gas marketing companies encountered numerous operation difficulties, met with financial reverses and either dropped out of the picture or were refinanced from time to time. While many of the possibilities for creating markets for large quantities of liquefied petroleum gases had been visualized many years ago, the extensive development of the potential outlets awaited the solution of the many technical problems having to do with the manufacture, transportation, and utilization of the products and the formulation and execution of plans pertaining to the merchandising of the commodities. In 1926 Phillips Petroleum Co. carefully investigated the market possibilities for these gases and as a result of these investigations laid

*Annual meeting of Natural Gasoline Association of America, Tulsa, May 19, 20 and 21.

plans for extensive and conservative development work. Since that time practically every step in the liquefied petroleum gas industry from the gas wells to the final utilization of the product, has been subjected to the scrutiny of the research engineer.

Problems pertaining to the manufacture of the products have been carefully studied, with the result that large scale operations resulting in the efficient recovery and production of liquefied petroleum gases, have been successfully put into practice. Consequently, products superior in quality have been put on the market. Difficulties of utilization at times formerly encountered due to variation in quality of product have been entirely eliminated. Safe and economical means for storage of the products have been developed. Improvements have been made in the technique of handling, transporting, and pumping these highly volatile products with the result that the difficulties which were hitherto encountered in these operations have been overcome. Decided improvement has also been made in the technology and design of various regulators and control equipment necessary for the manufacture, handling and utilization of these products. Noteworthy developments have been made in transportation equipment. New testing methods have been developed and standard specifications for the products have been formulated. Work with regulatory bodies has resulted in permitting tank cars to carry a greater load than was formerly possible. Conditions of utilization of the products have also been the subject of considerable investigation. New and more efficient types of appliances, burners, and other combustion equipment have been developed, thus giving a higher efficiency of combustion than is ordinarily encountered with other gases.

The placing of these commodities in the refined oil classification by the several freight associations makes for outstanding economic development. Indeed for all practical purposes it can be truthfully said that liquefied petroleum gas has gone from the "test tube to the tank car in the short space of three years."

Supply and Demand

The saturated hydrocarbons propane and butane, are the chief liquefied petroleum gases from the natural gasoline industry. The same products, as well as the corresponding unsaturated hydrocarbons, propylene and butylene, are present in gases from cracking stills in refinery operations. Since the trade recognizes no distinction between these substances, only the paraffin hydrocarbon terminology will be used hereafter in this paper. The terms, "propane" and "butane," are intended to include any hydrocarbon or hydrocarbon mixture whose boiling points are near to that of the paraffin in question.

Propane after being kicked about for several years is about to come into its own. It is an ill-repute in gasoline circles. No one seems to want it. Therefore, it has become a cheap wholesale commodity available from both the natural gasoline manufacturer and the refiner. Butane is more favorably received by the gasoline fraternity and while not being in really high standing is certainly not treated as an outcast. It would appear to be only primer philosophy that the refiner will eventually pay no more for butane than the costs necessary to extract it from his refinery gases. These, of course, are the total costs including the value of the butane as a finished product for other purposes, or its value as a raw material for other processes. Notwithstanding this apparently simple analysis of the problem, it seems as if some of the natural gasoline manufacturers have failed to realize that to some extent such a situation has already occurred. Likewise, one would judge that the refiner would not continue to purchase butane in the form of natural gasoline and sell it competitively with liquefied petroleum gas at a price below cost. Eventually the law of supply and demand will take care of any unsound practices. Consequently, the economic pressure will tend to favor the situation in which butane will be first available from the natural gasoline industry rather than from the refinery, since it will become a waste product at the natural gasoline plant before it does at the refinery and as such, will have little or no value as a raw material in its present chemical form. After extracting sufficient butane for his own motor fuel requirements, the excess product will then become a waste product of lower value to the refiner and must of necessity seek an outlet in the liquefied petroleum gas markets or will be chemically changed into other products of higher market value.

The continued increase in use of oil cracking processes by the refiner will compel the natural gasoline manufacturer to sell still more stable grades of natural gasoline which, in turn, will increase the supply of liquefied petroleum gases available from the natural gasoline industry. The average motor fuel contains 0.3 per cent of propane and 4.7 per cent of butane. The average daily consumption of motor fuel amounted to approximately 45,000,000 gallons in 1930. This means that the motoring public last year daily consumed about 2,250,000 gallons of liquefied petroleum gases in its motor fuel. Statistics indicate that as a very conservative estimate there is a daily potential production of at least 13,000,000 gallons of liquefied petroleum gases from the natural gasoline industry. However, this large supply is not immediately available. To begin with, the design and operation of the average natural gasoline plant is such that only a portion of the potential supply is extracted along with the raw natural gasoline. Another consideration in regard to the availability of liquefied petroleum gas lies in the fact that its production is more economically accomplished at the larger natural gasoline plants. The amount of liquefied petroleum gases removed from the raw natural gasoline in preparing it for the market is about 1,500,000 gallons daily of which about 50 per cent is propane. Probably 50 per cent of this immediately available supply exists at plants too small to economically justify equipment necessary for the further separation of liquefied petroleum gas products. This means then, that there is available a supply of about 750,000 gallons daily, which will undoubtedly find markets at existing competitive prices for the various uses to which they are adapted. When economic conditions justify, the supply of liquefied petroleum gases will be increased in proportion to the price level of the commodity.

Develop Markets

Propane, which is a gas at atmospheric pressure and at temperatures above minus 40° F., is used chiefly as a fuel for domestic purposes. This product comprises the bulk of the so-called "bottled gases." Available data indicate that there are more than 13,000,000 families in the United States in rural and suburban areas beyond gas mains that now use for cooking and water heating purposes, inconvenient forms of fuel such as wood, coal, gasoline and kerosene. These applications of such low form value fuels are the foundation upon which an enormous bottled gas industry is being built. These market possibilities, which deserve more energetic and more progressive merchandising efforts, have not as yet been given the consideration which they undoubtedly merit. The field for exploitation of fuel and appliance outlets is practically all virgin territory. If only 10 per cent of the potential market is secured, the bottled gas phase of the industry would represent a retail fuel value of about $70,000,000 annually, which would require on the part of the 1,300,000 customers an investment of about $200,000,000 for fuel burning appliances alone, not to mention the outlay for occasional replacement of appliances and for such accessory equipment as cabinets, cylinders, regulators, etc.

Butane, which is a gas at atmospheric pressure and at temperatures higher than 26° F., finds its market in the manufactured gas industry and in various other industries. This product is used as an enricher to increase the calorific value of certain gases, as a means for meeting peak load situations, and as the sole base material for the manufacture of gas for small towns where the installation of the conventional type of gas plant would not be economically feasible.

Butane is also used extensively as a gaseous fuel in many and varied industrial heating operations. The superiority of this high grade gaseous fuel is most fully realized where the consumption is large and where an economical, clean and easily controlled fuel is advantageous. In addition high efficiency of combustion is made possible by the uniformity and purity of the product. It is for these reasons that the industrial use of butane has been receiving such rapid recognition. When used as an industrial gas it is, of course, in direct competition with the product of the manufactured gas industry. During the past few months several marketers have entered this field. In some instances prices equal to that of natural gasoline or lower have been offered, although the generally quoted price of butane ranges from 2.75 to 4 cents per gallon, f.o.b. Group 3. On a strictly thermal basis butane at the above prices is in most cases cheaper than manufactured gas as evidenced by the following table of comparative prices:

TABLE 1—COMPARATIVE PRICES OF BUTANE AND CITY GAS

Cost butane at burner per gal	Equivalent cost 530 B.t.u. city gas per M.C.F.
8.0	41.4
7.5	38.8
7.0	36.2
6.5	33.6
6.0	31.0
5.5	28.4
5.0	25.9
4.5	23.3
4.0	20.7
3.5	18.1
3.0	15.5

The butane-air process has supplied a long felt need for an economical type of gas plant for small towns and for this reason this type of plant has proved very attractive to the manufactured gas industry. A study of the statistics pertaining to towns in the United States without gas service reveals that there are 2,423 towns each having a population between 1,000 and 2,500, and 667 towns each having in excess of 2,500 inhabitants. Census reports place the total population of these groups at 3,727,362 and 2,540,592 respectively. This is an average population of 1,538 inhabitants per town for the former group and 3,809 for the latter.

Intensive competition for gas franchises in small towns has been taking place during the past year, and it is evident that the progressive utility companies and ground individuals have fully realized that butane-air process plants form the background for sound investment because of the earning possibilities and the stability of income of this economical type of gas plant for small-town distribution systems. In addition, the process affords a means of developing the gas loads in towns with a very small population pending the completion of many natural gas line and high-pressure manufactured gas line projects. The development of this large potential market for gas is only a question of time. The field is especially attractive to financiers, promoters, and appliance and equipment manufacturers since the economic values of these attendant activities are much greater than that represented by the fuel consumption, which in itself justifies the efforts of the liquefied gas producer.

The number of small town gas plants (butane-air) supplied with fuel by Philfuels Co. and using butane as the sole base material for gas manufacture increased from one at the end of the year 1928 to seven at the end of 1929 to 49 served with fuel in 1930. During 1930 several other companies became interested in butane-air process plants, the Standard Oil Co. of California and the Skelly Oil Co. being especially active. From the information available, it is estimated that the total number of butane plants in operation at the present time is about 60. It is also estimated that 50 more plants are being constructed or are under contract for construction. This means that the industry is already assured of a total of 110 butane-air plants.

It is estimated that the total number of purchasers of all forms of liquefied petroleum gases in tank car quantities increased from about 60 at the end of 1929 to approximately 90 at the end of 1930. It is known definitely that the products have been purchased in wholesale tank car quantities in at least 34 states and Canada, representing 105 points to which the commodities were shipped, most of which are in the territory lying east of the Mississippi River.

Prior to the year 1930 there was no authentic statistical information on the marketed production of liquefied petroleum gases. A recent publication[1] gives the data in Table 2 pertaining to the sale of these gases.

TABLE 2—MARKETED PRODUCTION OF LIQUEFIED PETROLEUM GASES, 1922-1930

Year—	Gallons
1922	222,641
1923	276,863
1924	376,488
1925	403,674
1926	465,085
1927	1,091,005
1928	4,522,899
1929	9,930,964
1930	18,017,347

The growth of the liquefied petroleum gas industry is depicted graphically in Figure 1, in which there is also shown the comparative increase in business during recent years of several other young industries. In this comparison the volume of business for the year 1926 was taken as 100 per cent. Figure 1 clearly reveals that exceptionally rapid progress has been made in the sale of liquefied petroleum gases in the last few years, whereas the growth of the industry prior to that time had been more or less normal as compared with the other industries.

Economic Status

The growth of the liquefied petroleum gas industry affords remarkable opportunities for increased markets for the product of many manufacturers. Among these products may be classed storage tanks, tank cars, cylinders, regulators, pipe, fittings, gas ranges, hot water heaters, buildings, automobiles, tools, burners, laboratory apparatus, control instruments and many other articles too numerous to mention. In fact, a very large percentage of the apparatus and equipment used in the petroleum and gas industries are, of course, used in the production, transportation, and utilization of liquefied petroleum gases. It is therefore, obvious that industry in general is vitally concerned in the growth of this infant but lusty industry. Statistics are not as yet available regarding many of the financial, operating and economical

(Continued on Page 160)

TABLE 3—FINANCIAL AND OPERATING ESTIMATES OF LIQUEFIED PETROLEUM GAS INDUSTRY, 1930

Item—	Bottled gas A	Gas mfg. B	Industrial gas C	Total D
1. Investment, end of year	$17,000,000	3,225,000	2,250,000	22,475,000
2. No. retail customers, end of year	117,000	15,000	.....	132,000
3. Retail fuel sales during year	$4,500,000	$*350,000	.....	4,850,000
4. Appliance sales to dates	$12,000,000	1,500,000	.....	13,500,000
5. No. of persons employed at present	2,000	(†)	(†)	3,500

Item 1—This does not include any investment at gasoline plants, such as manufacturing equipment, storage tanks, tank cars, etc., which involve an investment of about $4,500,000. It does include the sales development costs prior to the nonprofitable stage of operation.

Item 2—This represents retail customers only. It does not include tank car purchasers of fuel.

Item 3—This is the gross fuel sales income from retail customers listed in Item 2.

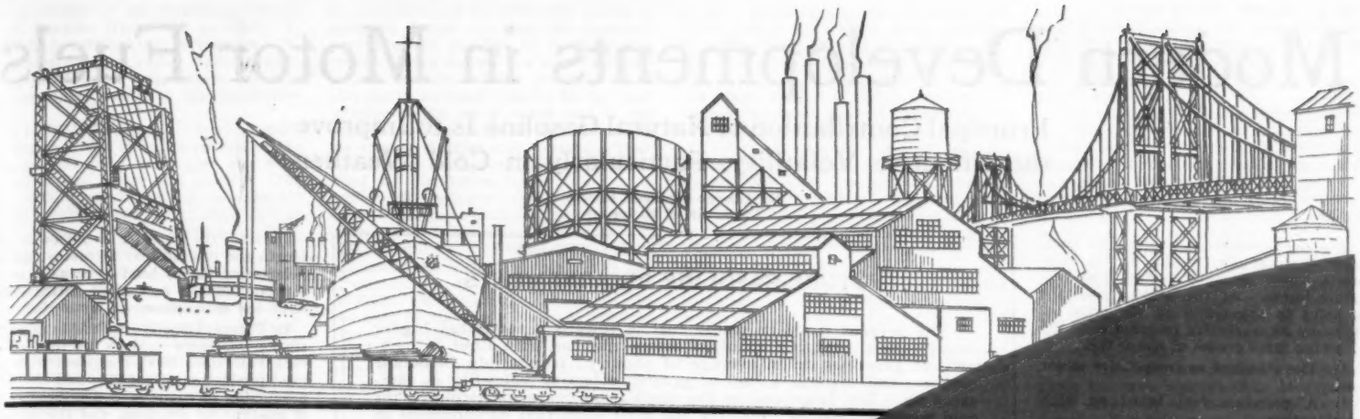
Item 4—This represents the gross retail sales income to date from gas burning appliances such as ranges, hot water, heaters, burners, etc.

Item 5—The estimate is based upon the number of full-time employes that would be required in the sales and operating activities under headings A, B and C. A larger number are actually employed, some working part time only.

*Most of the customers were secured this year, hence the retail fuel sales income would be very low as compared with that obtainable when customer saturation is approached.

†Gas manufacturing and industrial gas employes estimated to be 500.

[1]Department of Commerce, March 10, 1931.



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DUTCH BOY RED-LEAD

Modern Developments in Motor Fuels

Principal Contribution of Natural Gasoline Is to Improve the Effective Volatility, Particularly in Cold Weather

By George Granger Brown
University of Michigan*

The developments in motor fuel characteristics are the results of the composite effect of many factors and economic forces. At the present time the industry is apparently in the midst of changing its marketing program from the following three grades of motor fuel:

1. The standard or competitive motor fuel.
2. A premium fuel based on high knock rating.
3. A premium "high-test" fuel based on high volatility similar to aviation gasoline.

The present trend in marketing motor fuels is as follows:

1. A subgrade approximately 3 cents below the standard competitive product.
2. The standard competitive grade of motor fuel.
3. A premium gasoline of high knock rating and high effective volatility particularly adapted to the motor car rather than aviation service.

The premium high volatile aviation fuel should be eliminated as a separate grade because such a gasoline is no longer necessary nor even desirable. The improved volatility in the first 50 per cent of the standard or competitive priced motor fuel, and the improvement in the newer carbureting systems mean that reasonably satisfactory performance can be obtained even in cold weather with many of the standard priced motor fuels. This fact combined with the poor acceleration obtained on warm motors with aviation type gasoline has caused a rapid decrease in the demand for the premium "high-test" gasoline.

Steady improvement in the knock rating of the standard priced gasoline, has also tended to decrease the relative advantage in the premium antiknock gasoline. The logical move is, therefore, to combine improved knock rating and volatility in a single premium motor fuel. This is now being done.

The relatively large quantity of distress gasoline forced on the market by the overproduction in the last few years has developed a demand and a market for a low price gasoline of lower antiknock value than that usually marketed at the standard price. In many localities this market has been supplied entirely by cut-rate stations. The regular distributors are now recognizing this market and are prepared to supply it with a cut-rate gasoline at approximately 3 cents less than the standard price.

In many ways this low substandard motor fuel offers a solution to some of the problems in the industry, particularly in providing an outlet for those gasolines of such high knocking tendencies that they cannot be sold in competition with the other competitive gasolines and cannot be brought up to Ethyl standard with use of the maximum amount of Ethyl fluid allowed by law. On the other hand the widespread marketing of a motor fuel at 3 cents below the recognized competitive price will tend to still further decrease the net income of the refiner. This is obvious when it is considered that the first result of such a program is to lower the average selling price of motor fuel without increasing the quantity sold.

Developments in Quality

However, our purpose is to discuss not the effect of present tendencies in motor fuel marketing on the industry, but simply the modern developments in motor fuel quality. For this purpose we may classify the various factors that control motor fuel quality under three headings.

Economic forces, essentially supply and demand.

Technical forces, or reliable data concerning those qualities desired in motor fuel.

Commercial forces, evident in the specifications under which motor fuel is purchased or sold.

Without doubt, the most important economic factor is the relationship between supply and demand. The effect of this fundamental economic principle upon the price of gasoline has long been recognized but it has also exerted a very important influence upon the quality characteristics of motor fuel. Accurate knowledge concerning the desirable qualities in motor fuel has been almost entirely lacking until the last few years, but is now readily available and is becoming of major importance in determining specifications and motor fuel quality.

The third important factor in considering motor fuel developments is that of specifications which may be written by consumers, producers, or licensing organizations such as the Ethyl Gasoline Corp. Specifications are essentially the detail expression of other forces, economic, technical and political, but must be considered separately because of their direct importance in determining motor fuel quality.

*Annual Meeting, Natural Gasoline Association of America, Tulsa, May 19-21, 1931.

FUTURE GASOLINE REQUIREMENTS

The present trend in motor fuel is toward a somewhat higher knock rating, probably about 75 octane number, as a limit in competitive gasolines or an average of about 65 to possibly 70 octane number; and towards a fuel of greater effective volatility as indicated by a low front end in the distillation curve, particularly for cold weather gasoline. Perhaps the most important development in volatility will be a more adequate change in the first 50 per cent of the distillation curve to compensate for changes in atmospheric temperature. The proper extent of this change for the representative motor car now in service is indicated in Figure 2, and the probable developments for the immediate future have been indicated in Figure 1.

The place of natural gasoline in motor fuel is primarily to improve the effective volatility, particularly for cold weather. In order that natural gasoline may be used to the best advantage it is necessary that the vapor pressure of natural gasoline be limited so that it may be used in quantities up to 25 or 30 per cent without raising the vapor pressure of the final blend over about 12 lbs. Obviously smaller quantities of higher vapor pressure natural gasoline may be used without increasing vapor lock tendencies but with less improvement in acceleration.

With the increasing tendency to lower the front end of motor fuel in cold weather, it would seem that natural gasoline's natural function would be to assist in making this change by blending a greater percentage of natural with the same blending stock.

It is not the intention to review at any length the past history of motor fuel development, but a brief survey is necessary to indicate how these forces determine the development of motor fuel.

In Figure 1 are shown the total registration of motor vehicles at the end of each year since 1900, compared with the total production of gasoline and the total production of crude oil. The production of gasoline by cracking, and the production of natural gasoline are also included to show what effect these developments might have. For purposes of comparison the prices f.o.b. refinery of gasoline and of natural gasoline are also included.

The volatility of the motor fuel sold is indicated by the approximate average 10 per cent point and 50 per cent and 90 per cent points on the A.S.T.M. distillation as indicated in Figure 1. In an attempt to approximate the knock rating of the motor fuel, the octane number of the average motor fuel was estimated largely from volatility characteristics and also plotted in Figure 1.

Figure 2 shows the approximate A.S.T.M. distillation of the gasoline sold in the years as indicated. In the latter years these data are taken from the Bureau of Mines surveys and represent summer gasoline.

Economic Forces (1900-1918)

Referring to Figure 1, it is seen that the gasoline production kept well ahead of the total registration of motor cars until about 1910. From 1880 to 1910 the proration of gasoline obtained from a barrel of crude oil remained substantially constant, at about 5 gallons per barrel and the volatility of gasoline was approximately constant as indicated in Figure 2. By 1914 the yield of gasoline had increased to about 7½ gallons per barrel. The rapidly increasing demand for gasoline, made more acute by the demands of the war beginning in 1914, was first met by the obvious procedure of including more of the crude oil in gasoline.

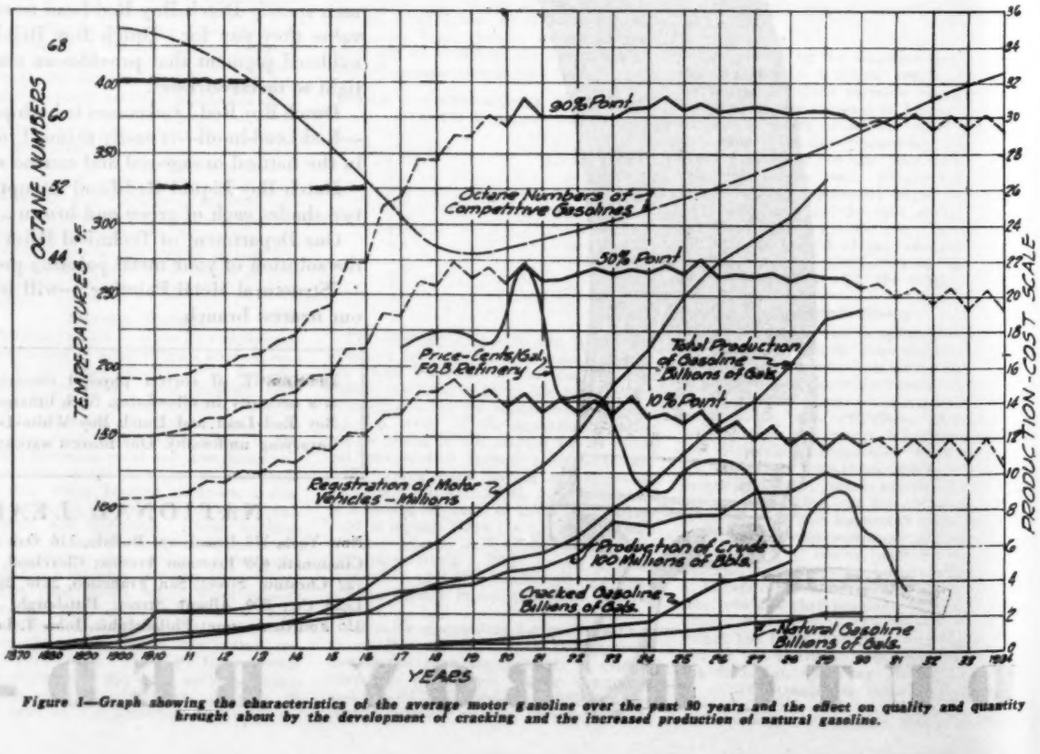
OCTANE NUMBERS
TEMPERATURES - °F
90% Point
Octane Numbers of Competitive Gasolines
50% Point
Price-Cents/Gal. F.O.B. Refinery
Total Production of Gasoline - Billions of Gals.
10% Point
Registration of Motor Vehicles - Millions
Production of Crude - 100 Millions of Bbls.
Cracked Gasoline - Billions of Gals.
Natural Gasoline - Billions of Gals.
YEARS
PRODUCTION - COST SCALE

Figure 1—Graph showing the characteristics of the average motor gasoline over the past 30 years and the effect on quality and quantity brought about by the development of cracking and the increased production of natural gasoline.

This is evident in the decreasing volatility of gasoline from 1910 to 1918. It should be noted that this decrease in volatility occurred in a rather uniform manner by raising the temperature throughout the entire range of the distillation curve.

Up to 1918 the economic factor, supply and demand, was in entire control of the situation. Gravity, color and odor were the criteria of motor fuel quality. The year 1918, however, should be regarded as the turning point when other factors began to exert an ever increasing effect.

Specifications

The war-time "Committee on Standardization of Petroleum Specifications," formed by the Government was the first organized group to determine specifications for motor fuel. The original committee was later replaced by the "Interdepartmental Committee on Standardization of Petroleum Specifications," and on November 8, 1921, by the "Interdepartmental Petroleum Specifications Committee," and still later by the "Technical Committee on Lubricants and Liquid Fuels of the Federal Specifications Board." The work of these several committees has been continuous to the present time and has had an important effect on motor fuel development.

The first specifications set were those for U. S. Motor gasoline. These were drawn up primarily to check the continuing decrease in volatility of motor fuel supplied on government purchase during the war and to represent the quality of motor fuel then available rather than to define the qualities required in motor fuel for satisfactory engine performance. The effect of these specifications was almost immediate in controlling the minimum volatility of gasoline. The fact that these specifications remained practically unchanged until September, 1929, is due to the relief of economic pressure towards further decrease in volatility by the rapid development of the cracking process in the years immediately following the war and to the careful manner in which these specifications were prepared.

Effect of Scientific Knowledge

The year 1918 also marks the beginning of the first serious efforts to determine the relationship between motor fuel and engine performance, in the organization of the co-operative fuel research program. It was about the same time, that Midgely and Boyd again took up their work on the control of detonation which resulted in the brilliant discovery of lead tetraethyl.

To date changes in the specifications for U. S. Motor gasoline have been based solely on data obtained in the co-operative fuel research program at the Bureau of Standards and have been concerned exclusively with volatility, particularly with the upper part of the distillation curve in regard to crankcase dilution, and the first 10 per cent as controlling ease of starting. The research program conducted by the Natural Gasoline Association from June, 1926, to May, 1930, included a complete study of motor fuel volatility as related to engine performance including the importance of all parts of the distillation curve and the relationship of vapor pressure to vapor lock. Since it usually takes about two years for the results of research work to be incorporated into commercial usage, it is not surprising to find that the results of this investigation are just beginning to exert an influence on commercial products or specifications.

Although the importance of the first 10 per cent in determining ease of starting was appreciated by the Bureau of Standards in 1926, no change in this direction in the specifications for U. S. Motor fuel were made effective until September, 1929, when the volatility specifications were changed from a 20 per cent maximum of 221° to a 10 per cent maximum of 176° F.

With the formation of the Ethyl Gasoline Corp. and the licensing of refiners to use Ethyl fluid, another specification, that of knock rating was introduced.

Present Tendencies

Since 1918 we find a continuous increase in the volatility of motor fuels, but practically all of this has been in the first half of the distillation curve as indicated in Figures 1 and 2. The increase in volatility may be attributed partly to economic forces, in that the increased production of gasoline by cracking and recovery from natural gas would naturally yield a more volatile product, but is also due in no small measure to the rapid increase in the use of motor cars in cold weather, which focussed attention upon the ease of starting and warming up obtained from the use of fuels with a low front end distillation curve.

Thus the influence of technical information upon specifications for motor fuel is becoming of increasing importance, and the economic force of supply and demand has much less influence upon motor fuel characteristics than in the years prior to 1918. This condition is made possible not only by the fairly complete information now avialable on motor fuel volatility but also in the facilities at the disposal of the refiner, particularly cracking and blending, with hydrogenation for future consideration, which enables the refiner to control volatility, knock rating and gasoline yield where only one was an independent variable before.

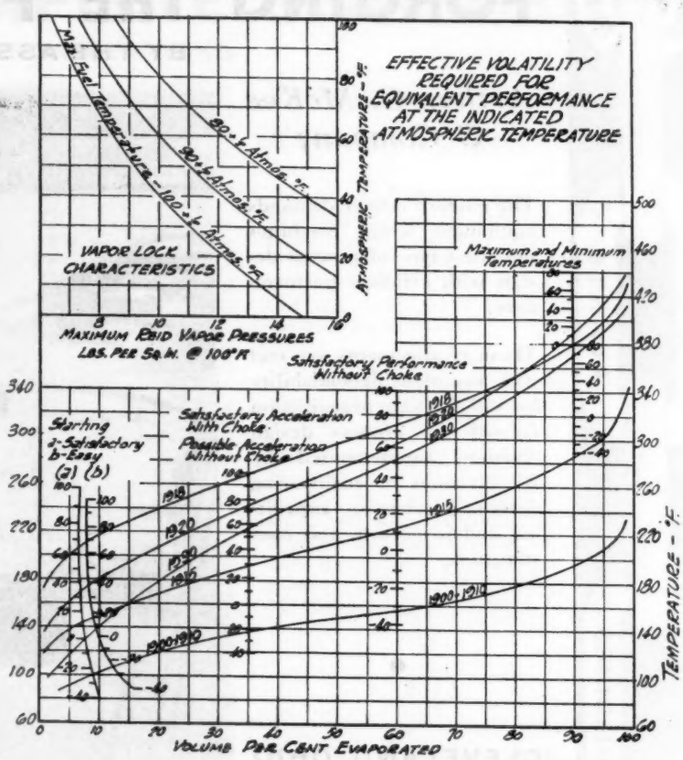

Figure 2—Graph showing the effective volatility needed for equivalent performance at different atmospheric temperatures.

The most important present consideration in motor fuel volatility, is the practical recognition by the industry that the volatility characteristics of the fuel should be changed to meet changing atmospheric temperatures. At the present time motor fuel volatility is changed with changing atmospheric temperature, but the change in volatility is in no ways adequate to compensate fully for the change in atmospheric temperature.

Figure 2 indicates the relationship between distillation characteristics and atmospheric temperature for satisfactory performance on most modern cars. Of course there is no such thing as an average car because they are all different, but Figure 2 has been prepared by eliminating those cars equipped with radiator shutters and highly efficient manifold heaters on one hand and those cars devoid of adequate manifold heat and accelerating devices on the other hand. It seems reasonable to expect that changes in volatility will, in the future, more closely follow the suggestions for seasonal changes in motor fuel incorporated in Figure 2 than has been the case in the past.

Knock Rating

How far the increase in knock rating of competitive priced gasoline will go is difficult to estimate, but there now seems to be a tendency toward increasing the knock rating of standard priced gasoline to approximate 70 octane number. Before this value is approached in the average, it may call for a further increase in the knock rating of Ethyl Gasoline although there are present difficulties in the way of a further increase. Sooner or later an economic balance will be found, between the increased cost of producing high knock rating fuel, and the increased power and economy obtainable therefrom. Perhaps the marketing of a substandard fuel is the immediate present move toward a proper economic balance in regard to antiknock fuels. And there is always the possibility of the development of a high compression engine which does not require fuel of high knock rating.

The production of excessively high knock rating gasoline by the use of high temperature cracking processes is not now economical because of the high losses and low yield. Except in the case of selected charging stock the average maximum economic knock rating of a straight cracked product appears to be about 70 to 75 octane number which is about the same as that of natural gasoline, compared with the present average motor fuel of about 59 or 60 octane number.

Specifications

The specification of the Federal Specification Board and of the Ethyl Gasoline Corp. have already been mentioned. About a year ago the American Society for Testing Materials organized technical committee "A" as a subcommittee of D-2 on petroleum products and lubricants. Technical committee "A" on gasoline has as its principal function the study of the relation between test data and service performance of gasoline and to prepare and recommend material specifications. Because the recommendations of this committee would be based upon scientific test data carefully studied and interpreted by committees of consumers and producers, it is expected that these commercial specifications will be most valuable and satisfactory and will be recognized as a commercial definition of gasoline. At the present time technical committee "A" has three subcommittees, 1, on gum; 2, on corrosion; 3, on vapor lock. None of these subcommittees have yet recommended specifications, but the committee on gum and the committee on vapor lock are making satisfactory progress and appear to have no serious difficulty in obtaining the necessary test and performance data. The committee on corrosion is finding it difficult to obtain the necessary data on which to base its recommendations.

This committee will probably prepare a general all inclusive specification for gasoline which will include all motor fuel considered satisfactory from an operating standpoint. For this reason we may expect the recommendations from technical committee "A" to be somewhat similar to the present specifications for U. S. Motor gasoline since this is a similar specification including all fuels considered satisfactory for motor car operation. It is also probable that this committee will recognize the importance of changes in volatility to meet changes in atmospheric temperature.

The present automobile represents about the same susceptibility to gum as those cars that will be produced in the future. For this reason the gum limits to be recommended may stand for some time. In the case of vapor lock, however, there is considerable room for improvement in the design of the fuel systems and the committee will probably find it possible to revise its vapor pressure recommendations upwards as improved cars are produced.

Natural Gasoline in Motor Fuel

With the steady increase in knock rating of competitive motor fuels, the knock rating of natural gasoline will not long remain noticeably superior to the ordinary motor fuel. This means that improved knock rating will not be an important selling point for use of natural gasoline. Although knock ratings of competitive motor fuel may run from 70 to 78 octane number it is doubtful if competitive motor fuel will exceed an average knock rating of about 65 octane number for some time. This is approximately the knock rating of a Mid-Continent natural gasoline containing about 15 per cent of butane which should make an excellent blending stock for improvement in volatility.

For this reason it seems that the place of natural gasoline in motor fuel is entirely that of lowering the front end of the distillation curve thereby improving the effective volatility of the finished product. The vapor pressure of such a natural gasoline should be in the neighborhood of 15 to 20 pounds per square inch so that it could be blended in relatively large quantities, 30 to 50 per cent, to produce a fuel of easy starting and excellent acceleration characteristics.

Blending for Knock Rating

In blending natural gasoline it is usually possible to estimate the knock rating of the final blend by simply taking the weighted average of the knock rating expressed in octane of the natural gasoline and of the blending stock. For example, if the natural gasoline shows a knock rating of 65, and the blending stock a knock rating of 55, and the blend is to be composed of 20 per cent natural and 80 per cent of blending stock, the resulting blend will have a knock rating of $.2 \times 65 + .8 \times 55$ or 57. The error is usually on the safe side in that the knock rating of the final blend may be somewhat higher.

Where the differences in knock rating are rather large this method is less satisfactory, and in some cases the knock rating of the final product is noticeably higher than that computed in this manner. When blending natural gasoline with some cracked blending stocks, the improvement in knock rating is occasionally more than would be ordinarily expected. In fact it has been frequently observed that a natural gasoline blended with a highly cracked blending stock of the same knock rating, gives a blend having a knock rating two to four points higher than either of the blending materials.

Blending for Volatility

Blending to produce volatility is based upon A.S.T.M. distillation characteristics which may be determined with sufficient accuracy in the manner given by Alden and Blair or other similar methods already available.

When blending natural gasoline it is necessary to limit the vapor pressure of the final blend in order to insure rea-

(Continued on Page 163)

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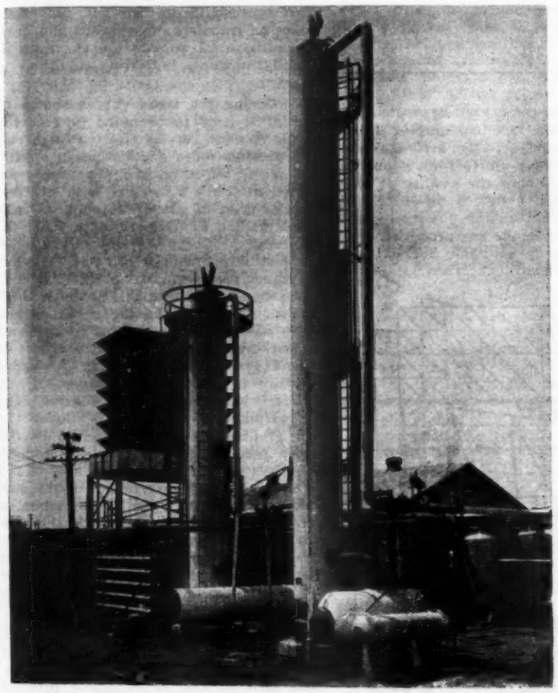

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VAPOR RECOVERY SYSTEMS

Effect of New Grading on Production

Seven Natural Gasoline Grades Likely to Replace the Five. Cost of Change Will Vary With Size and Type of Plant

By R. C. Alden
Phillips Petroleum Co.*

No doubt you have all compared your plants' products with the new grading system. Consequently you are aware of what it will mean in your own operations. There are, however, several relationships which may prove of value in applying the new grading system to plant operation. In some ways it is to be regretted that the new grading system includes 24 grades. The large number of possible grades has a tendency to discourage both buyer and seller. However, the number of probable grades is considerably less than 24.

A recent survey of the products of plants of the Phillips Petroleum Co. showed that 95 per cent of the normal production of these plants would fall in 10 grades in covering the entire vapor pressure range of the grading system below 30 pounds. There were occasional instances of plants which fell on both sides of the emphatically definite trend of the great majority.

The question immediately occurs, "Why 24 possible grades?" The answer is that with the exception of the "northwest" corner of the grading system, natural gasolines have been encountered for each of the possible grades. Very rarely such occurrences are due to the nature of the natural gas treated. More often they are the products of plants too small to justify the investment necessary for efficient extraction of pentanes and heavier or the careful control of propane and butane contents. It would be unfair to exclude such materials from the grading system. However, they represent only a small proportion of the total natural gasoline production.

It is almost certain that no one in this room has shipped a finished product falling in the five grades with 25 to 40 at 140 and above 14 pounds vapor pressure. Shipments in the three grades above 22 pounds vapor pressure with 40 to 55 at 140 will undoubtedly be comparatively rare as will be shipments in Grade 14-70. It is also believed that the two grades remaining in the 30-34 pound vapor pressure range will be in little demand. Thus, from a practical viewpoint, there remain 13 grades for the consideration of all, save the exceptional buyer or seller.

Three of these 13 grades (the 14-pound grades) are practically butane-free gasolines; three (the 18-pound grades) are gasolines of about 15 per cent butane content and are suitable for tank shipment; in other words, they are export natural gasolines. The remaining seven grades are comparable with the natural gasolines which have been customarily used in the past by refineries for blending.

The refiners have been accustomed to five grades, so, in effect, the new grading system substitutes seven grades for these five. At the same time, the range of products has been increased to give the natural gasolines of restricted butane content an opportunity to find markets at their proper price levels. In addition, the rare or freak natural gasolines can find markets without affecting the markets of normal products.

Perhaps too much emphasis has been placed on the freak and rare gasolines, without due regard for the normal trend of the great majority of natural gasolines. The writer believes that, barring radical changes in gasoline plant operation, at least 90 per cent of the natural gasoline production will be moved in the 13 grades mentioned above. At any given time, depending on economic conditions, the emphasis will be on the high or low vapor pressure products. It is difficult to predict for the future in this regard, but the new grading system provides sufficient flexibility for any conceivable economic changes. It is probable that the increasing production and conservation of light hydrocarbons at refineries will place future emphasis on natural gasolines of relatively low vapor pressure.

Perhaps the question most frequently asked about the new grading system is in regard to the loss in changing from one grade to another. To arrive at an informative answer to this question, it must be realized that the quality of the natural gasoline produced by a given plant is dependent on the quality of the natural gasoline in the gas processed and on the equipment available for extraction and fractionation. Thus, a given plant will yield products following a definite curve across a chart representing the grading system as shown in Figure 1. The location and the general slope of the curve will depend on the pentane ratio (pentane ratio is the ratio volumetric of pentanes to pentanes and heavier) of the gasoline extracted, while the efficiency of fractionation will determine the rate of curvature. Since efficient fractionation results in almost straight trends, curvature of the trend for a plant indicates either inefficient fractionation or transfer of fractions. For products below 21 pounds the curvature is usually to the left, indicating losses or transfers of pentanes and heavier. Above 21 pounds the curvature is usually upward, indicating additions of propane.

Observing the trend curves shown on Figure 1, it is to be noted that considerable changes can be effected in the vapor pressure of a plant's product without much effect on the per cent evaporated at 140° F. Thus with efficient fractionation of gasolines produced from bases with a pentane ratio of 0.45, the resultant products are in only one of the distillation ranges (55 to 70), while the vapor pressure (26.8 to 12.3) falls in five ranges. The volume loss under these conditions in reducing the gasoline from 70 to 55 at 140 is estimated to be about 30 per cent as compared with a loss of only 11 per cent in reducing the vapor pressure from 26 to 22 pounds. From this it is apparent that the control point for gasoline plant operation under the new grading system is bound to be the vapor pressure of the finished product. Gasolines made at the upper limits of the several vapor pressure ranges of the new grading system will have the maximum per cent at 140 possible with the raw materials and equipment available. Furthermore, a study of Figure 1 shows that these maximum vapor pressure products represent the maximum yields within the same limitations.

It is obvious that the ability of a given plant to extract and conserve the pentanes and heavier, to extract sufficient butane, and to eliminate propane will have a decided influence on the location and shape of its particular trend with respect to the grading system. With reasonably good plant design and operation, the essential factor locating the trend is the pentane ratio of the gasoline extracted. This, of course, is beyond the control of the operator. But it limits the quality of the product made to fairly definite per cents at 140 for each of the several vapor pressure limits.

These factors lead to the conclusion that consideration of losses in passing from one grade to another will be limited almost entirely to loss as a function of vapor pressure change of the finished products. The per cent at 140 will become a factor in the price structure of the new grading system only to the extent of the demand and supply relationships for grades of equal vapor but varying distillation characteristics.

Figure 2 shows graphically a theoretical calculation of volume loss as a function of vapor pressure change for gasolines having pentane ratios between 0.2 and 0.7. In the calculations, the gasolines were assumed to be propane-free, and losses were calculated on the basis of products of 26-pound vapor pressure. The chart shows that volume losses for vapor pressure changes are almost independent of the pentane ratio. This is in contrast with the volume loss to effect changes in the per cent at 140, where the loss increases rapidly with increases

(Continued on Page 159)

METHOD WILL NOT WORK A HARDSHIP

Under the new method of grading natural gasoline the natural gasoline plant operator will generally find his production will fall in one of 13 grades and the greater share of this material will fall within a range of 7 grades which are likely to take the place of the 5 grades now commonly traded.

The discussion here will give the plant operator an idea regarding the volume loss or gain which his plant may experience in making the change from the old to the new system of grading.

A price ratio is also included covering a wide range of vapor pressures, calculated to yield an equivalent revenue, when assuming poor butane elimination in the one case and perfect butane elimination in the other case.

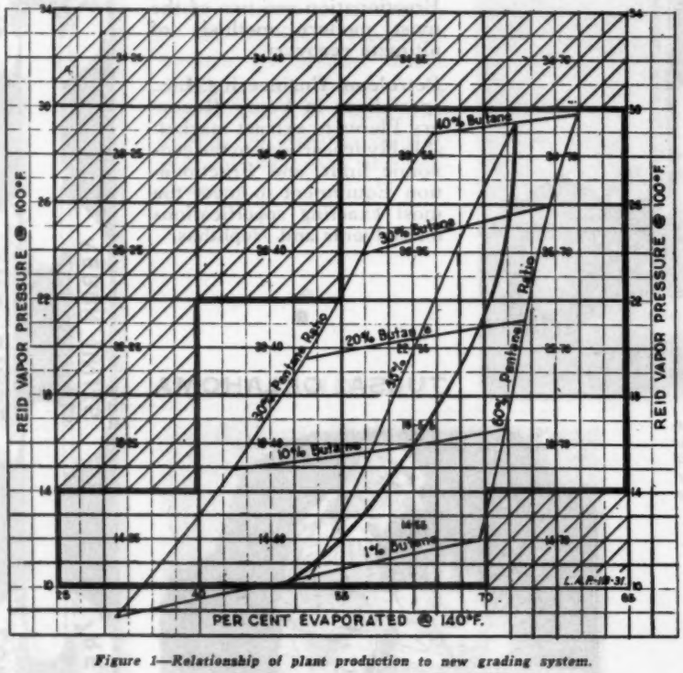

Figure 1—Relationship of plant production to new grading system.

TABLE 1—MAXIMUM AND MINIMUM PRICE RATIOS TO EQUALIZE GASOLINE PLANT INCOME UNDER NEW GRADING SYSTEM*

Vapor pressure	Poor butane elimination: Propane content	Butane content	% vol. loss	Price ratio	Perfect propane removal: Butane content	% vol. loss	Price ratio	Average of 5th and 8th columns (price ratio)
30	...	....	....	.....	41.9	—11.7	0.856	.....
26	2.0	21.5	0	1.000	32.0	0	1.000	1.000
22	0.5	19.5	4.3	1.051	28.2	11.5	1.120	1.086
18	0	14.4	10.3	1.116	14.4	20.5	1.258	1.187
14	0	7.5	17.3	1.209	7.5	26.5	1.362	1.286
10	0	0	23.5	1.303	0.0	32.0	1.471	1.390

*It is assumed that no losses of pentanes will be encountered. Such losses would raise the price ratios and would be most frequently encountered at plants with poor propane elimination. Consequently the ratios in the eighth column will more nearly represent average conditions than those shown in the fifth column. The last column is suggested as an approximate average.

TABLE 2—PRICE RATIOS OF TABLE 1 WITH 14-POUND NATURAL AS UNITY

Vapor pressure	Poor propane removal	Perfect propane removal	Average
30	.....	0.658	.....
26	0.827	0.735	0.781
22	0.870	0.829	0.850
18	0.925	0.925	0.925
14	1.000	1.000	1.000
10	1.081	1.081	1.081

*Annual meeting, Natural Gasoline Association of America, Tulsa, May 19-21.

Output of Casinghead Gas in California

Natural Gasoline Extracted From Bulk of Gas Supply. Develop Underground Gas Storage

By William Moeller, Jr.
Vice President, Southern California Gas Co., Los Angeles*

The principal source of natural gas in California is casinghead gas produced as a by-product of crude oil production, and while there are several fields in which dry gas alone is being produced, this dry gas has not been used extensively during the past five or six years. These dry gas fields have been shut in and are being held in reserve for future use to augment probable decline in casinghead production.

Natural gas was first used for domestic and commercial purposes in the year 1912 and was produced from the dry gas zone overlying the oil zones in the Buena Vista Hills Field near Taft. Approximately 20 gas wells were drilled in this field with original rock pressures as high as 750 pounds, and capable of producing as much as 10,000,000 feet daily against a line pressure of 400 pounds. At that time casinghead gas was wasted to the air and was not treated for gasoline extraction. However, following this early period with the advent of natural gasoline extraction plants, the oil operator collected and conserved this casinghead gas and it was made available for distribution to the natural gas consumers.

With increasing supplies of casinghead gas the demand for dry gas became less and less. About 1921, with the development of extensive oil production in the Los Angeles Basin area, there was sufficient casinghead gas available to the distributing companies so that all dry gas was practically shut in. This condition has continued by reason of the discovery and development of new fields and deeper producing zones in the old fields.

During March the net daily production of the State was 1,160,000,000 feet of gas. Of this amount 218,000,000 feet were used in the fields as fuel for production and refining of oil; 212,000,000 feet were absorbed in gasoline plant operations; 462,000,000 feet were sold to the gas companies, and 252,000,000 feet were blown to the air.

With reference to the gas sold to gas companies, it is of importance to this group that with the exception of San Diego, all of the large cities of California are now being served with straight natural gas of approximately 1,100 B.t.u. The daily average market demand of the State is approximately 350,000,000 feet during summer, and 650,000,000 feet during the winter.

To meet this demand for natural gas the gas companies are dependent upon, and have extensive transmission systems to the three main sources of supply; namely, the Los Angeles Basin fields, the Santa Barbara coastal fields including Ventura Avenue, Moore Ranch and Elwood, and the San Joaquin Valley fields including Kettleman Hills, Buttonwillow, Midway-Sunset and Elk Hills.

In the above major districts there are 39 areas which are oil fields and from which the gas companies have been able to meet the market demand with the abundant supply of casinghead available after the extraction of natural gasoline and oil company fuel requirements. In addition to this supply of oil field gas there are the gas fields of Moore Ranch or Goleta Point, Tulare Lake and Buttonwillow, and also the important dry gas zones of the Buena Vista Hills and Elk Hills. On the border line between a gas field and an oil field is the famous Kettleman Hills Field.

Because of the fact that production from dry gas wells has not been used for many years past, and is not now being used, this discussion will deal largely with casinghead production.

Casing Program for Dry Gas Wells

The usual procedure in drilling gas wells is to set and cement a water string immediately above the gas zone, and following a successful water shut-off test, to continue drilling into the gas zone to the desired depth, and to land a production string with perforated pipe opposite the desired portion of the zone from which production is expected. So far no attempt has been made to produce separately from different strata in any one well, and experience has not indicated the necessity of so doing. Should this condition arise it would be necessary to balance the cost of two separate wells against the cost of one well with a casing program adequate to produce and protect the two separate zones.

In cases where the gas zone overlies an oil zone, the oil operator must set and cement a water string above the gas zone, and also a second string above the oil zone and below the gas zone. Before cementing the second string, the gas zone must be thoroughly mudded until there is no loss of mud under a mud pressure test. It is usually required that enough cement be used to reach the base of the gas zone.

It is general practice to install tubing in all gas wells, usually 2-inch, and to connect the tubing and the casing to a flow manifold equipped with flow beans to control the flow. Each well is equipped with an orifice meter to measure its output. The wells are operated either through the casing or the tubing, depending upon the condition of the well. Gas wells are also provided with suitable drips or separators installed in the flow line to remove water or sand which might be produced by the particular well. Each well is fitted with a recording pressure gauge attached to the casing.

Casinghead Production and Gas Traps

As already stated the chief source of our gas production is the large flowing oil well. In our flush fields large oil wells come in with initial gas productions up to 100,000,000 feet daily. All of this gas is treated for its natural gasoline content and the gas is sold to the gas companies. California oil wells are completed somewhat as follows:

All oil wells are tubed and fitted with a christmas tree of suitable design to handle the oil and gas production and to withstand the maximum pressure of the well. In the Kettleman Hills Field where pressures of about 2,500 pounds are experienced, the christmas tree is designed and tested for 5,000 pounds pressure. The christmas tree may be comparatively simple such as an installation designed to produce with two beaned outlets from the tubing or it may be in accordance with Kettleman Hills practice where the tree is designed to flow through either tubing or casing, or both. In this hookup two flow lines from 4 to 6-inch are connected to flow outside the tubing and through the casing and four flow lines, from 3 to 6 inches in diameter, are arranged on a double deck to flow out of tubing. The tree is securely anchored by a plate fitting on top of the tree and tied with turnbuckles and steel rods to the casinghead. The flow lines are led away from the rig and into the manifold of the gas trap system.

All flowing oil wells producing gas in appreciable volumes are fitted with flow beans to control the flow, and with gas traps to separate the gas from the oil. The gas traps now generally used are of the automatic type, and consist of a tank chamber fitted with suitable baffles, a float operated oil outlet valve to regulate the level of oil in the tank, and a gas outlet at the top of the tank fitted with a back pressure regulator to control the gas pressure in the tank. These traps are designed for the working pressures for which they are intended to be used. Standard designs are furnished for the following working pressures; 30 pounds, 150 pounds, 500 pounds and 700 pounds. With proper trap installations, gas and oil is efficiently separated from wells producing as much as 150,000,000 feet of gas, and 600,000 bbls. of oil daily, with gas being delivered under a pressure of 500 pounds.

The casinghead gas from the gas traps is delivered to the natural gasoline extraction plant and the residue gas from these plants is then delivered to the natural gas pipe lines for delivery to markets. Natural gasoline plants are generally designed to treat wet gas and deliver residue gas to the highest pressure under which said gas can be received from the gas traps in order to avoid recompression. The delivery pressure from the plants has been generally standardized at 400 pounds, 100 pounds and 25 pounds. When the pressure of these wet gas collecting systems is less than 30 pounds, the natural gasoline extraction plant undertakes to compress and treat such gas and make it available for delivery at about 25 pounds pressure. It is the general practice for the natural gas pipe line companies to compress gas above 25 pounds to the pressure required for transmission.

Where gas is separated from oil at pressures of 500 pounds or more, it is now the general practice to flow the oil from high pressure trap to an intermediate pressure trap operating at about 150 pounds maximum where a second separation of gas is made from the oil. The oil from the intermediate pressure trap then passes to a low pressure trap operating at about 30 pounds maximum pressure where the final separation of gas is made from the oil. Many advantages are claimed for the stage separation, chief of which is that the capacity of the separators are greatly increased and at the same time a supply of high pressure gas is made available for gas lift, repressuring, high pressure gasoline plants, gas company purchase and so forth. Gas from the high pressure trap is relative dry because at high pressures the lighter natural gasoline vapors are held in solution in the oil.

At Kettleman Hills this system has been further enlarged and built up to a multiple trap installation consisting of four primary traps operating at about 500 pounds per square inch and two secondary traps operated at about 50 pounds per square inch. In these installations back pressure regulators are used on the gas discharge line from each stage. The separators may be by-passed at will and in addition to safety or pop valves venting to the air, pressure relief regulators vented to the blow off stack are an added protection against excessive pressure. These back pressure regulators are very important in the operation of this system, and since they are pilot operated and require a dependable source of 20 to 30-pound gas, it is obtained from the high pressure discharge line and reduced in stages by the use of small pressure regulators. These are enclosed to prevent freezing in cold weather. This method of multiple traps is in use at all Kettleman Hills wells and is functioning

(Continued on Page 163)

*Before Natural Gas Department, A.G.A., Memphis, Tenn.

TULSA A.I.M.E. MEETING DISCUSSES BOTTOM HOLE PRESSURE PROBLEMS

By L. G. E. Bignell

Carrol V. Sidwell, petroleum engineer with the Amerada Petroleum Corp. of Seminole, Okla., presented a paper prepared by himself and C. V. Millikan, also of the Amerada Petroleum Corp., Tulsa, on "Bottom Hole Pressure in Oil Wells" before the monthly meeting of the Mid-Continent section of the A.I.M.E. in Tulsa, May 13. About 25 engineers were present. This paper, which was published in full in the May 14 issue of The Oil and Gas Journal, page 95, deals with a pressure recording instrument developed by the Geophysical Research Corp. under the direction of Dr. F. M. Kannenstine. Mr. Sidwell had one of the pressure gauges at the meeting.

In the discussion that followed the main question asked was: "What is the economical value of securing bottom hole pressures in oil and gas wells?" Based upon past experience with dynamometers for weighing pumping wells some of the engineers anticipated that their executives would ask for information as to the economic value of securing bottom hole pressures, and the practical application of the data secured to production problems.

When bottom hole pressure is known it will be possible to design the flow strings of tubing for the well in better proportions to give more efficiency in operation. With data available covering the formation pressure of a well when a string of tubing is run it will be possible to determine promptly when this string is no longer efficient because of drop in bottom hole pressure during the flowing period.

Of Much Assistance

It was stated that the Amerada Petroleum Corp. has found data secured by the use of this pressure gauge of much assistance in designing flow strings for its wells in the Seminole area and is using it freely for that purpose. By making use of these data it found it can save much time in correcting conditions at a well when the flow efficiency falls and eliminate a lot of experimenting with the various conditions that might have caused this change for with all data available, including bottom hole pressure, it does not take long to decide when a string of tubing should be changed.

In Hobbs, New Mexico, Field the bottom hole gauge is being used to keep a record of the formation pressure and by this method and control of rate of withdrawal of oil from the wells it is possible so to retard water encroachment that it is hoped practically all of the oil will be ultimately recovered, using the force exerted by the water flood to clean the formation of its oil and drive it to the wells and surface.

This idea can be expanded to include eventually a formula for estimating the potential of a well or a pool in a manner somewhat similar to that outlined by Pierce and Rawlins for estimating gas reserves and described in United States Bureau of Mines Report of Investigations Nos. 2,929 and 2,930.

It is admitted at this time there are a number of factors to be correlated before such a formula can be definitely stated, and it is possible future development may show it will never be possible to establish one set of formulae for all fields, but it is felt certain that when the formation pressure is known it will be possible to determine with a fair degree of accuracy the probable life of the pool after the wells have been produced for a

(Continued on Page 164)

California Gasoline Capacity Gains

Western State Leading in Number of New Plants Due to Kettleman Hills. Oklahoma and Texas Gain

By C. O. Willson

Continued expansion in facilities for the manufacture of natural gasoline in California largely accounts for a gain of almost 1,000,000 gallons daily in the total capacity for the United States, according to data compiled by The Oil and Gas Journal in connection with its 1931 Survey of the Natural Gasoline Industry in the United States.

The West Coast state, which now easily leads its closest competitors, Oklahoma and Texas, both in the rated capacity of its plants and actual output, had 154 plants of various types on May 1 with a capacity sufficient to manufacture 3,862,725 gallons of natural gasoline daily. The previous year the State had 146 plants with a rated capacity of 3,192,907 gallons daily, a gain of 8 in number of plants and 669,818 gallons in daily capacity. This gain of over 20 per cent came largely from the increased capacity of the plants in the Kettleman Hills area, where seven plants on May 1 had a capacity of 850,000 gallons daily. As in other states, the capacity of the older fields showed a tendency to decline, but the gains in the newer fields of California more than offset the declines.

Due to the continued growth in California, the natural gasoline industry, as shown in the accompanying tables, was able to maintain its normal yearly expansion the past year, although the number of listed plants decreased. For several years the yearly gain in capacity has been approximately 1,000,000 gallons. The past year, ending May 1, the capacity jumped from 9,541,321 gallons to 10,531,511 gallons, a gain of 990,191 gallons.

Fewer and Larger Plants

During this period, however, the number of plants decreased from 1,071 to 987, the latter figure including 80 plants which were listed as shut down on May 1 of this year. This decrease in the number of plants reflects a trend in natural gasoline manufacture which has been apparent since 1928. In that year the Journal's annual survey showed a total of 1,229 plants, the greatest number in the history of the industry. Since that time there has been a steady decline, and it is probable that this trend will continue through the coming year.

Primarily this change is due to a policy of building larger and fewer plants by most manufacturers. This is shown in the Kettleman Hills development where seven plants now completed have an average capacity in excess of 100,000 gallons each. In the early days of the industry, a plant having a capacity of 20,000 gallons was the exception, the policy being to build several plants in an area each having a capacity of a few thousand gallons daily. Now it is exceptional to build a plant under 20,000 gallons, a majority of the manufacturers feeling that they are not justified in building a plant unless there is sufficient gas available to give them a flush output of at least 20,000 gallons daily. In general both the investment and operating costs are less per gallon of output with the larger plants.

Effect of Market

This tendency toward fewer plants has been hastened the past year due to the depressed market that has prevailed for natural gasoline throughout the United States. This is particularly true in recent weeks when prices have been at the lowest levels since natural gasoline became an accepted component of motor fuel. With all grades available in the Mid-Continent at 1½ to 1¾ cents per gallon in the Mid-Continent and around 2 cents in California, it is certain that practically the entire industry has been operated at a loss. The result has been the elimination of the most inefficient plants. In most cases these eliminations have been the smaller plants located in the older fields. In many cases, the available casinghead gas supplies decreased to the point where the plants were not able to operate at only a small fraction of their rated capacities. With low prices and no compensating reductions in operating costs it has been found expedient to shut down the plants. Usually, when a plant is shut down arrangements are made for some other near-by plant to take over the gas so that the actual production of the field is not decreased.

However, the over-all production has shown a decrease in several of the largest fields in California and the Mid-Continent and these declines in the principal producing states have more than offset the increases in the flush fields with the exception of California

Natural Gasoline Plant Capacities By States

	May 1, 1931 — No. of plants*	May 1, 1931 — Daily capacity	May 1, 1930 — No. of plants	May 1, 1930 — Daily capacity
Arkansas	14	118,950	11	106,500
California	154	3,862,725	146	3,192,907
Colorado	3	10,500	2	3,600
Illinois	68	52,767	78	55,313
Kansas	21	197,400	24	220,800
Kentucky	6	37,800	8	44,550
Louisiana	43	316,355	43	331,750
New Mexico	3	73,000	1	9,000
New York	4	3,100	3	1,300
Ohio	31	72,585	28	63,637
Oklahoma	242	2,823,312	283	2,839,693
Pennsylvania	133	89,660	144	116,169
Texas	140	2,296,883	155	2,018,767
West Virginia	117	396,514	136	406,874
Wyoming	8	179,960	9	130,460
Total	987	10,531,511	1,071	9,541,320

*Includes 80 plants with 257,065 gallons daily capacity which were listed as shut down.

Natural Gasoline Plant Capacity by Divisions

	No. of plants	Daily capacity (gallons)
California	154	3,862,725
Mid-Continent (Oklahoma, Kansas, Texas, Arkansas, Louisiana)	461	5,752,960
East of Mississippi	359	652,426
Rocky Mountains	14	263,400
Total	987	10,531,511

Growth of Natural Gasoline Industry

	No. of plants	Daily capacity (gallons)
1931	987	10,531,511
1930	1,071	9,541,320
1929	1,124	8,695,727
1928	1,229	7,865,652
1927	1,148	6,947,264
1926	1,063	5,121,000
1925	1,143	4,642,561
1924	1,012	3,396,961

Natural Gasoline Plants By States

Abbreviations: Oil absorption, absp.; compression, comp.; oil absorption and compression, A-C. All capacities given in gallons per day. *Shut down.

COMPILED BY THE OIL AND GAS JOURNAL

ARKANSAS

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Arkansas Natural Gas Corp., El Dorado	Sec. 31-17s-15w, Union County	C-A	10,000
Arkansas Natural Gas Corp., Louann	Sec. 24-15s-17w, Ouachita County	Absp.	10,000
Gulf Refining Co. of Louisiana, El Dorado	El Dorado south field	Absp.	4,000
Henderson Co., El Dorado	El Dorado	Absp.	14,000
Imperial Oil & Gas Products Co., Smackover	Smackover	Comp.	8,000
Lisbon Gasoline Co., El Dorado	El Dorado, 8 mi.	Absp.	9,000
Lisbon Gasoline Co., El Dorado	El Dorado, 7 mi. W	Absp.	10,000
Magnolia Petroleum Co., El Dorado	Sec. 8-15-16, Union County	Absp.	6,800
Rainbow Gasoline Corp., El Dorado	Sec. 28-17s-14, Union County	Absp.	12,000
Reserve Petroleum Co., Box 9, Louann	Sec. 30-15-16, Ouachita County	Absp.	7,000
Simms Oil Co., Smackover	Smackover	Comp.	4,000
Simms Oil Co., Smackover	Smackover	Comp.	4,000
Standard Oil Co. of Louisiana	El Dorado, 3 mi.	C-A	19,234
Standard Oil Co. of Louisiana	Smackover, 3 mi.	Absp.	916

CALIFORNIA

Bankline Oil Co., Willow St., Signal Hill	Farm Lot 64, Signal Hill	Absp.	30,000
Barnsdall Oil Co. of California, Goleta	Sec. 14-14n-29w	Absp.	65,000
Beiridge Oil Co., Beiridge	Lost Hills Field	Absp.	5,000
Beiridge Oil Co., Beiridge	Lost Hills Field	Absp.	5,000
Beiridge Oil Co., Beiridge	Lost Hills Field	Absp.	7,000
Boisa Chica Oil Corp., Box 1025, Ventura	Ventura	Absp.	12,000
Brea Canon Oil Co.	Coyote Hills	C-A	5,000
Calumet Oil Co., Fillmore	Sec. 3-3-19, Ventura County	Comp.	1,000
Coline Gasoline Corp., 319 Kerckhoff Bldg., 560 So. Main St., Los Angeles	Sec. 16-4s-14w	Absp.	10,000

CALIAFORNIA (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Coline Gasoline Corp., 319 Kerckhoff Bldg., 560 So. Main St., Los Angeles	Sec. 16-3n-24w	Absp.	6,000
Cowan Oil & Refining Co., 6th & Spring Sts., Los Angeles	Rosecrans	Absp.	10,000
Del Rey Oil & Refining Co., Ltd., 422 Washington Bldg., Los Angeles	500' E and 30' S from NE cor., Lot 14, Blk. 13, Del Rey Beach	Absp.	60,000
Edington-Witz Refining Co., Ltd., Inglewood	Aerick & Eastwood Sts., Inglewood	Absp.	7,500
Field, O. C., Gasoline Corp., 111 W. 7th St., Los Angeles	Huntington Beach	Absp.	30,000
Field, O. C., Gasoline Corp., 111 W. 7th St., Los Angeles	Maricopa	Absp.	6,000
Fullerton Oil Co., R.F.D. 2, Box 72, Fullerton	Sec. 3-3-10w, Orange County	C-A	6,000
General Petroleum Corp. of California	Santa Fe Springs lease	Absp.	190,000
General Petroleum Corp. of California, Ventura	Barnard lease	Absp.	45,300
General Petroleum Corp. of California, Higgins Bldg., Los Angeles	Athens tank farm	Comp.	70,000
General Petroleum Corp. of California, Brea	Tonner Canyon	Absp.	*20,000
Getty, Geo. F., Gasoline Co., 1060 Subway Terminal Bldg., Los Angeles	Seal Beach	Absp.	10,000
Gilmore Gasoline Plant No. 1, Walnut Avenue and Hill St., Long Beach	Sec. 30-4s-12w	Absp.	30,000
Gilmore-Dabney, Walnut Avenue and Hill St., Long Beach	Sec. 29-4s-12w	Absp.	30,000
Gilmore-Dabney, Walnut Avenue and Hill St., Long Beach	Sec. 24-4s-13w	Absp.	30,000
Los Nietos Producing & Refining Co.	Kettleman Hills	Absp.	150,000

(Continued on Page 165)

where the Kettleman Hills development has brought a gain in total production for that State. For the entire country according to the latest available figures of the Bureau of Mines natural gasoline production declined from 192,200,000 gallons in March, 1930, to 170,000,000 gallons in March, 1931. For the calendar year ending January 1, 1931, the total production of natural gasoline was approximately the same as for the previous year. However, since that time there has been a consistent month to month decrease when compared to the previous year.

More Stabilized Products

The fact that manufacturers are making more stabilized products is at least a minor factor in this decrease in total production although the fact that no new Mid-Continent fields with large flush production of casinghead gas and a decline in the older fields no doubt accounts for the bulk of the decline. Due in part to the fact that prices have been low, buyers are inclined to be more particular in regard to specifications and the manufacturers more willing to concede to these demands. Lower vapor pressures are required so that many manufacturers have not only reduced the propane content of their finished products to a minimum but are removing larger fractions of their butanes.

This situation is of course reflected in yields from casinghead gas and in total production. Cases are cited where production has been reduced as much as 30 per cent in order to meet the requirements of buyers. To take care of this demand many manufacturers have been forced to modernize their equipment, particularly in the fractionating end and it is probable that the expenditures made in these programs the past year have been as great as in the building of new plants.

A small number of manufacturers are constantly increasing their outlets for propane and butane in the liquefied gas field. However these outlets at present take care of only a small fraction of the production available from natural gasoline manufacturers so that the bulk of the hydrocarbons removed from natural gasoline in so-called "super-stabilization" are either wasted or used as plant or field fuel. Manufacturers feel that this greater discrimination on the part of buyers will increase in importance and they are preparing for it both in the manufacturing and sales ends. Under the sponsorship of the Natural Gasoline Association of America, new additional grades of finished natural gasoline have been introduced for the consideration of the buyers. These grades are tentative and will not be finally adopted until the buyers' attitude is known.

HIGH POINTS IN 1931 ANNUAL SURVEY

Although present production of natural gasoline is not as great as a year ago, with fewer operating plants, total capacity of all plants expanded over 900,000 gallons daily during the past year.

Greatest increase in California due to developments in Kettleman Hills where seven plants have a rated capacity of 850,000 gallons daily with actual output of approximately 500,000 gallons daily. This area now produces approximately 25 per cent of total in California.

Largest plant is operated on Coseboom lease, Long Beach field, by the Shell Oil Co. of California. Plant has a capacity of 220,000 gallons daily.

Phillips Petroleum Co., largest manufacturer of natural gasoline, with 46 plants having a capacity of 1,329,500 gallons daily. The Standard Gasoline Co. is second with 38 plants having a capacity of 896,175 gallons daily.

Trend in natural gasoline plants as shown by the development in Kettleman Hills and Oklahoma City fields is toward fewer and larger plants which can be more economically constructed and operated.

Part of decrease in production is due to greater stabilization in which hydrocarbons not desired as motor fuel are removed from the finished natural gasolines.

No plants built as a result of the new East Texas development, a dominating factor in the crude oil production situation.

California

As previously stated, the developments in California were outstanding due to the growth in the Kettleman Hills area. This field is still in its infancy and it is probable that annual surveys of the natural gasoline industry for several years to come will make note of continued expansion.

As listed in this year's survey there are seven natural gasoline plants in the Kettleman Hills area with six operating. The plants and their capacities are as follows:

	Capacity (gallons)
Los Nietos Production & Refining Co.	150,000
Standard Gasoline Co. (Standard Oil of California)	140,000
Standard Gasoline Co. (Standard Oil of California)	110,000
Standard Gasoline Co. (Standard Oil of California)	130,000
Superior Oil Corp.	110,000
The Texas Co. of California	60,000
Western States Gasoline Corp.	150,000
Total	850,000

The 130,000-gallon plant of the Standard Gasoline Co., the last to be completed in the field, is not operating. This is due to the restrictions placed on the completion of wells. The plant was built last fall in expectation that the gas would be available from one or more new wells. The bulk of the field is now being operated by the North Dome Association which was organized by concerns having holdings in the field. Under this unit plan of operation the crude oil production of the field will be restricted to the available market. It is expected sufficient wells will be completed to furnish gas for the Standard's third plant in the near future.

Kettleman Hills' Future

Students of the natural gasoline industry agree that the Kettleman Hills area probably will continue to overshadow all other possible developments in California or any other area for some time to come and will become a dominating factor in markets as it has already on the West Coast. Although only 10 wells are producing in the field, the six natural gasoline plants now operating are producing approximately 25 per cent of the total output in California.

The government report for March of this year showed that the six plants processed 11,988,855,000 cubic feet of gas from which 14,559,849 gallons of natural gasoline was secured. The bulk of this production has an exceptionally low vapor pressure due to the requirements of shippers, the bulk of it being shipped by boat after being transported in pipe lines from the field to terminals along the Pacific Ocean. In the entire State, 42,080,130,000 cubic feet of casinghead gas were treated and 61,764,854 gallons of natural gasoline secured.

At present, the natural gasoline production of the Kettleman Hills area is approximately half of the crude oil production. Due to the large volume of gas available from the wells in three cases, it requires one plant to take care of the gas available from one well. In one instance the natural gasoline extracted from the gas exceeds the allowable crude oil production of the well.

It is agreed that this unusual relationship between gas and crude oil production will not be maintained when additional wells are drilled. However, those in a position to know feel certain that a relatively high gas-oil ratio will be maintained. The possibilities of the future are indicated in the fact that the proven section of the North Dome area is estimated at 22,000 acres and the Middle Dome, 8,000 acres. The South Dome is only partially defined and its probable producing area is not estimated.

It is not known at this time how rapidly the field will be developed. Very little expansion is planned over the remainder of the year. If more of the crude oil is needed the natural gasoline output of the field could easily be doubled and this large production maintained indefinitely.

The plants operate with well pressure and with the large production the cost per gallon is lower than in any other field in California. Due to this fact, natural gasoline manufacturers feel that Kettleman Hills will continue the dominating factor in that State in natural gasoline as in the crude oil end. Because the surplus supplies are shipped to the East Coast and through export channels to foreign countries, the field's output is of direct importance to Mid-Continent markets.

The Belridge-Lost Hills Field, which is about 30 miles from Kettleman Hills, deep sand development has increased the natural gasoline production. A plant recently completed has a rated capacity of 50,000 gallons daily.

The new development in the Playa Del Rey or Venice Field of southern California was also responsible for the construction of new plants one of which has a capacity of 60,000 gallons daily. The four plants now operating in that field have a capacity of approximately 100,000 gallons daily.

Outside of the three areas named there was little new plant construction in Cali-

(Continued on Page 134)

Personnel of Natural Gasoline Industry

Following is a list of companies operating one or more natural gasoline plants. The data include name of company, general office address, total number of plants, total capacity and personnel. A list of plant superintendents including a number of chief chemists and chief engineers will be found on page 94.

The list does not include a few companies which do not report their personnel. Most of these companies are small manufacturers who do not maintain distinct organizations for the operation of their plants. The names of these companies and capacities of their plants will be found in that part of the survey which gives a list of plants by states.

COMPILED BY THE OIL AND GAS JOURNAL

Company and general office address—	No. plants	Daily cap'y. gallons	President	Vice President	Secretary	Treasurer	Sales Manager	Gen. Supt. of Plants	Purchasing Agent
Akin Gasoline Co., 1801 Exchange Natl. Bank Bldg., Tulsa	2	2,000	J. H. McCoy	J. D. Dinsmoor	L. E. Dinsmoor	H. R. Johnson	A. J. Pfister		W. S. Cox
Alum Rock Gas Co., National Transit Bldg., Oil City, Pa.	1	200	R. P. Stevens	C. I. Crippen	T. H. Wight	C. R. Beddows	J. H. Isherwood		Roy Klinger
Amerada Petroleum Corp., 65 Broadway, New York, N. Y.	7	53,250	A. Jacobsen	A. M. Blow	Robert Nock			M. E. Mockley	Guy W. Edmunds
American Oil Development Co., 1414 Oliver Bldg., Pittsburgh, Pa.	8	3,025	Theodore A. Tack	Harry S. Tack	Willis H. Siegfried	Augustus V. Tack		John Hays	
Arab Gasoline Corp., Eastland, Tex.	1	25,000	Samuel Butler	P. T. Sharples	W. E. Cox	W. E. Cox	K. B. Tanner	Franklin Dwyer	K. B. Tanner
Arkansas Natural Cos., Ard's Bldg., Shreveport, La. (includes Arkansas Natural Gas Corp., Arkansas Fuel Oil Co. and Reserve Nat. Gas Co. of La.)	7	57,000	Henry L. Doherty	D. W. Harris	E. N. Watkins	B. R. Muirhead		K. E. Jones	W. D. Martin
Associated Producers Co., 17 Battery Place, New York, N. Y.	1	1,300	M. P. Williams	R. McKelvy	W. J. Burker	K. R. Hankinson		W. S. Corwin	Abe Kaufman
Atlas Oil Co., Clarion, Pa.	1	100	Not incorporated						
Bankline Oil Co., 634 So. Spring St., Los Angeles, Calif.	1	30,000	Lionel T. Barneson	H. J. Barneson	W. E. Kropp			E. L. Tobias	
Barco Gasoline Co., 1309 E. 15th St., Tulsa	1	1,000	Thomas Chestnut	R. A. Koons	J. L. Goddard	M. F. Powers		J. H. Archer	

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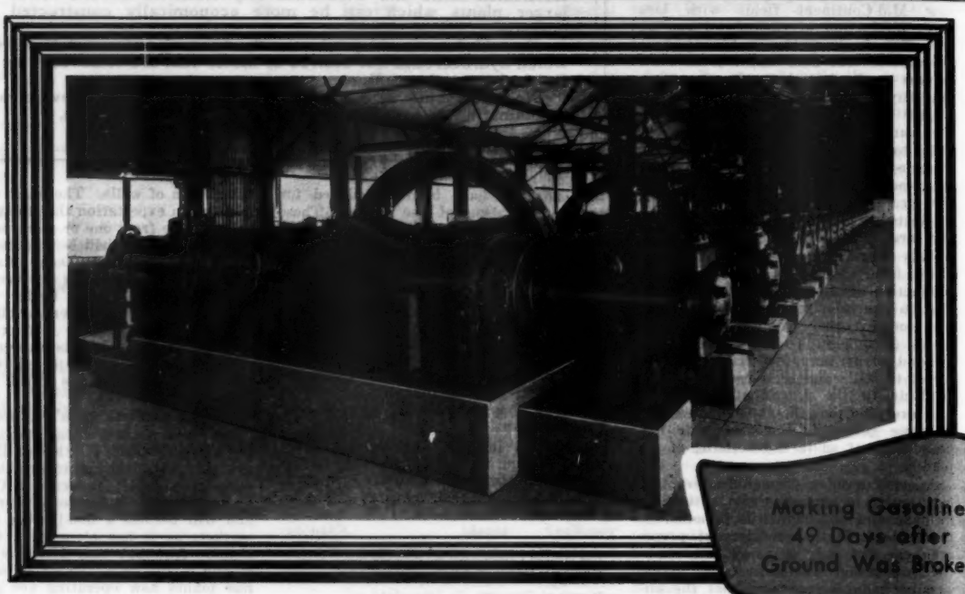

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49 Days after
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Because of the simplicity of their design, CLARK "Super 2-Cycle" engines are quickly and easily put together when they arrive on a job. . . . And because of the precision with which CLARK Engines are built, they are always ready to run without trouble as soon as they are set up.

The time and labor saved in building Clark-equipped plants is an important element of economy.

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day that

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Gals. of Natural Gasoline
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Two views of the Phillips Petroleum Corp. North Plant in Gray County, Texas—a 70,000-gal.-per-day plant built in 49 days.

of Installation
ding Natural Gasoline Plants

CLARK BROS. COMPANY . . . Olean, N. Y.

Export Office: 150 Broadway, New York, N. Y.

Mid-Continent Sales Offices: Tulsa, Okla., and Houston, Texas

California: Smith Booth Usher Co., 228 S. Central Ave., Los Angeles

Warehouses: Tulsa; McCamey and Sweetwater, Texas; Artesia, New Mexico

Foreign Offices: Clark Bros. Company, London; Balkan States Trading & Importing Co., Bucharest, Roumania

more Natural Gasoline
any other make of Engine

CLARK

Personnel of Natural Gasoline Industry

Company and general office address—	No. plants	Daily cap'y. gallons	President	Vice President	Secretary	Treasurer	Sales Manager	Gen. Supt. of Plants	Purchasing Agent
Barnsdall Oil Co., Petroleum Bldg., Tulsa	9	35,300	E. B. Reeser	R. F. MacArthur*	L. D. Messner	L. D. Messner	H. M. Edinger	A. J. Schlosser	O. E. McClatchey
Barnsdall Oil Co. of California, 12th Floor Commercial Exch. Bldg., Los Angeles, Calif.	1	55,000	R. A. Broomfield		E. C. Reed	E. C. Reed		O. Weaver	C. E. Good
Bartlett Gasoline Co., 303 Wright Bldg., Tulsa	1	15,000	J. H. McCoy	Dean E. Foster	H. R. Johnson	H. R. Johnson	A. J. Pfister	D. E. Foster	D. E. Foster
Bell Oil & Gas Co., Kennedy Bldg., Tulsa	6	25,000	S. L. Lubell	Mark Finston*	Albert Finston	J. J. Lubell	Albert Finston		C. E. Cadieux
Belridge Oil Co., 1106 Bank of Italy Bldg., Los Angeles, Calif.	4	87,000							
Berry, Pryor, Petrolia, Pa.	1	20							
Big Lake Oil Co., Benedum-Trees Bldg., Pittsburgh, Pa.	1	50,000	Levi Smith	J. G. Farquahar*	W. E. Huston	J. G. Farquhar		J. S. Posgate	Republic Oil Co.
Bolsa Chica Oil Corp., 410 Roosevelt Bldg., Los Angeles, Calif.	1	12,000	William Ford	S. A. Reed	F. B. Gormley	S. A. Reed	F. B. Gormley	Guy E. Davies	F. B. Gormley
Breckenridge Gasoline Co., 2313 Madison Ave., Toledo, Ohio	1	6,000	A. S. Close	John G. Dorn	A. S. Hickok	A. S. Hickok		R. L. Ponsler	
Brenneman & MacDowell, 312 S. Cole St., Lima, Ohio	2	1,200	Co-partnership					E. R. Perfect	
Brea Canyon Oil Co., 831 Standard Oil Bldg., Los Angeles, Calif.	1	14,000							
Calumet Oil Co., 517 I. W. Hellman Bldg., Los Angeles, Calif.	1	1,000	J. E. Wallis	T. H. Collins*	W. F. Staunton	W. F. Staunton		J. C. Armstrong	
Canadian River Gas Co., Independence, Kans.	1	10,000	W. S. Fitzpatrick	A. R. Jones	Victor A. Iobe	W. V. Heckman		G. A. Woods	
Cannon Gasoline Co., Box 963, Amarillo, Tex.	1	5,000	J. J. Hastings	F. J. Storm	J. B. Dooly	F. J. Storm	F. J. Storm	J. J. Hastings	F. J. Storm
Carbide & Carbon Chemicals Corp., 30 E. 42d St., New York, N. Y.	3	5,500	J. A. Rafferty	G. O. Curme*	A. C. Cornell	C. T. Ayres	J. G. Davidson		
Carnegie Natural Gas Co., Frick Annex Bldg., Pittsburgh, Pa.	7	5,595	S. W. Meals		James J. Campbell	H. E. Jeffries		John Glass	
Carson Carbon Co., 432 New St., Cincinnati, Ohio	1	500	J. B. Hawley	Bromwell Ault	H. A. Vance	H. A. Vance		C. V. Teegerstrom	
Carter Oil Co., Tulsa	8	284,500	R. M. Young	W. T. Funk*	J. L. Cluley	J. L. Cluley	J. R. Freeman	G. E. Edgett	B. Gooderham
Casto Oil Co., St. Marys, W. Va.	1	250	Partnership					Ira Williams	Ira Williams
Clinger Oil & Gas Co., Tidioute, Pa.	2	1,000	A. V. Clinger			W. F. Clinger		W. F. Clinger	
Cochran, John G., & Co., 676 Main St., Sheffield, Pa.	1	700	John G. Cochran, manager						
Coline Gasoline Corp., Railway Exchange Bldg., Chicago, Ill.	2	16,000	J. H. Keefe	F. C. Ripley	A. J. Olmsted	H. Lankheet		H. E. Moulton	
Coltexo Corp., Monroe, La. Executive office 45 E. 42d St., New York, N. Y.	3	104,000	F. F. Curtze	Edwin Binney*	Reid L. Carr	George L. Bubb	W. H. Anders	H. H. Reardon	L. J. Ward
Columbian Gasoline Corp., Monroe, La. Executive office 45 E. 42d St., New York, N. Y.	7	59,000	F. F. Curtze	Edwin Binney*	Reid L. Carr	George L. Bubb	W. H. Anders	H. H. Reardon	F. L. Jones
Comar Gasoline Co., Shell Bldg., St. Louis, Mo.	2	28,000	T. F. Lydon	E. J. Nicklos	P. R. Chenoweth	P. R. Chenoweth	L. van Eeghen	S. S. Smith	C. B. Singleton
Comar Oil Co., Shell Bldg., St. Louis, Mo.	2	13,000	U. deB. Daly	T. F. Lydon	P. R. Chenoweth	T. F. Lydon	L. van Eeghen	S. S. Smith	C. B. Singleton
Consolidated Gasoline Co., 2313 Madison Ave., Toledo, Ohio	1	8,000	Charles B. Eddy	A. S. Hickok	A. S. Close	A. S. Hickok		R. L. Ponsler	
Continental Oil Co., Continental Bldg., Ponca City, Okla.	6	35,500	D. J. Moran	W. H. Ferguson*	W. W. Bruce	G. F. Smith	H. J. Kennedy	D. C. Williams	W. K. O'Connor
Cook Oil Lease, Kelletville, Pa.	1	500	E. S. Collins, owner						
J. S. Cosden, Inc. (Oklahoma), 1700 Electric Bldg., Fort Worth, Tex.	2	32,000	R. W. Kellough and George N. Moore, receivers				F. E. English	Thomas Bryan	E. E. Brogden
Cowan Oil & Refining Co., 303 Fidelity Bldg., Los Angeles, Calif.	1	10,000	John A. Arnold	W. G. Howard	W. G. Howard			A. Holden	
Crosbie & Moran, Inc., 1810 Exchange Natl. Bank Bldg., Tulsa	6	135,000	J. E. Crosbie	W. B. Moran	M. E. Church	M. E. Church		F. M. Neely	A. W. Dwen
Daugherty, C. R., & Co., Y.M.C.A. Bldg., Butler, Pa.	3	140	C. R. Daugherty, manager						
Deep Rock Oil Corp., Atlas Life Bldg., Tulsa	5	25,000	John J. O'Brien	John L. Gray*	W. R. Francisco	W. R. Francisco	B. L. Majewski	W. A. Melton	R. G. Martin
Del Rey Oil & Refining Co., Ltd., 422 Washington Bldg., Los Angeles, Calif.	1	60,000	Lionel Barneson (Mark D. Woolery, receiver)	F. N. Rumbley	W. L. Appleford	J. H. Johnston		E. F. Jones	
Desdemona Gasoline Co., 421 Cappa Bldg., Fort Worth, Tex.	1	2,500	L. E. Hirt	W. F. MacDermott	J. E. Anderson	J. E. Anderson		D. H. Moss	
Devonian Oil Co., 618 Exchange Natl. Bank Bldg., Tulsa	3	23,000	J. H. Evans	A. W. Leonard*	George D. Foster	L. C. Ritts		E. S. Calvert	H. R. Dean
Dewey Portland Cement Co., Dewey, Okla.	1	2,500	D. M. Tyler		R. W. Moore	W. E. Tyler	P. R. Chamberlain	E. R. Cheek	P. R. Chamberlain
Dinsmoor & Co., St. Marys, W. Va.	1	500	J. D. Dinsmoor	L. E. Dinsmoor	W. P. Kerwood, Jr.	W. P. Kerwood, Jr.			W. P. Kerwood, Jr.
Eagle-Picher Mining & Smelting Co., 214 W. Third, St., Joplin, Mo.	1	5,000	A. E. Bendelari	George W. Potter	Joseph Hummel, Jr.	Joseph Hummel, Jr.	W. N. Corbet		W. N. Corbet
East Ohio Producing & Refining Co., 1,405 E. Sixth St., Cleveland, Ohio	1	6,000	R. W. Gallagher	Christy Payne	R. W. Brink	R. W. Brink		J. G. Hanks	Geo. H. Horsley
Edington-Witz Refining Co., Ltd., 576 Subway Terminal Bldg., Los Angeles, Calif.	1	7,500	C. B. Edington	H. T. Witz	R. W. Moore	R. W. Moore	D. J. Sullivan		
Empire Gas & Fuel Co., Ltd., Wellsville, N. Y.	1	500	Harry Bradley	George H. Bradley	Harry Bradley	George H. Bradley		E. C. Harder	
Empire Oil & Refining Co., Bartlesville, Okla.	12	235,500	H. L. Doherty	F. R. Coates*	C. E. Murray	R. L. Morton, Jr.	S. B. Crooks	G. M. Davidson	G. A. Thompson
Enfisco Oil Corp., 214 Court Arcade Bldg., Tulsa	1	1,500			M. Jerome Fischer			D. E. Sanders	M. Jerome Fischer
Equitable Gas Co., 435 Sixth Ave., Pittsburgh, Pa.	2	5,000	F. R. Phillips	F. F. Schauer*	W. B. Carson	C. J. Braun, Jr.	Joseph McKinley	Judson Bonsall	C. W. Leppar
Federal Oil & Gas Co., 109 N. Union St., Akron, Ohio	3	500	Frank B. Many	L. M. Pettit*	C. F. Schnu	E. B. Gill	Charles W. Heasley	Chas. W. Heasley	Chas. W. Heasley
Field, O. C., Gasoline Corp., 111 W. Seventh St., Los Angeles, Calif.	2	36,000	O. C. Field	W. G. Metson	N. J. Hale	R. B. Hale		J. C. Burks	
Fleming, J. E., Titusville, Pa.	1	500						B. H. Crippen	
Franklin, Wirt, Petroleum Corp., Franklin Bldg., Ardmore, Okla.	2	50,000	Wirt Franklin	F. M. Porter*	F. M. Head	E. Galt	C. A. Franklin	R. R. Owens	
Fullerton Oil Co., R.F.D. No. 2, Box 72, Fullerton, Calif.	1	6,000	W. L. Valentine	W. F. Ball*	V. T. Severns	W. L. Valentine			
General Petroleum Corp. of California, Higgins Bldg., Los Angeles, Calif.	3	205,000	J. A. Brown	E. R. Rich*	D. W. Woods	F. C. Adams	E. R. Rich	R. C. Wheeler	R. M. Ketchum

(Continued on Page 86)

They guide him to countless improvements in design, ingenious developments in construction.

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Crane experience covers 76 years . . . from the beginning of the American oil and gas industries until today. It covers not only the widest familiarity with metal capacities and valve designing, but an exhaustive knowledge of piping requirements of the oil and gas industry. Out of it has been developed materials to meet every need from field to automobile and kitchen range.

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Crane knowledge includes a vast library of chemical data and test charts, collected through the 43 years since the Crane metallurgical laboratory was opened in 1888 . . . the first ever started in an American foundry.

Heavy Standard Crane Special Brass Wedge Gate Valve No. 437. Non-rising stem. Heavier proportions than standard valves. Repacks under pressure. With valve open, has been subjected to test pressures of 700 to 3000 pounds without leaking. Working pressures to 150 pounds. (At right)

Standard Brass Solid Wedge Gate Valve No. 431. Solid wedge disc fits perfectly into tapered seat. Body ribs guide the disc accurately. Seating surfaces ground for accurate seating. Stem and disc connection slip-on type. Repacks under pressure. Steam working pressure, 125 pounds. Recommended for gasoline, air, oil, or water service. (At left)

Extra Heavy Crane Hard Metal Gate Valve No. 68-E. For high pressure, high temperature service. Body and disc of Crane Hard Metal (bronze). Repacks while under pressure. Working pressures to 250 lbs. at 550° F.; hydraulic pressures to 800 lbs., non-shock. (At right)

Hydraulic Wedge Gate Valve No 230-H. Of hard metal (bronze) non-rising stem. For cold water or oil working pressures to 800 pounds in lines not subject to shock. For pressures to 350 pounds in lines subject to shock. (At left)

Since the Crane line . . . whether of brass valves, or iron, or ferrosteel, or steel . . . is complete, it is never necessary for Crane Co. to push or recommend a valve of one kind when another is more suitable.

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Experience and knowledge are an important part of the equipment of the specialists in piping materials that Crane Co. keeps stationed at strategic points throughout the country, ready to advise oil and gas men as to the best materials for each point in a piping layout. These specialists are at your service.

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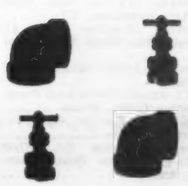
STEAM, LIQUIDS, OILS, GAS, CHEMICALS



CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVENUE, CHICAGO
NEW YORK OFFICES: 23 WEST 44TH STREET
Branches and Sales Offices in Two Hundred Cities

Personnel of Natural Gasoline Industry

Company and general office address—	No. plants	Daily cap'y. gallons	President	Vice President	Secretary	Treasurer	Sales Manager	Gen. Supt. of Plants	Purchasing Agent
Getty, George F., Gasoline Co., 1060 Subway Terminal, Los Angeles, Calif.	1	10,000	J. Paul Getty	R. M. Blodget	L. R. Richards			W. F. Crane	
Gilmore, Forrest E., Co., Beacon Life Bldg., Tulsa	3	20,000	J. H. Brooks, receiver					C. J. Smith	
Gilmore Gasoline Plant No. 1, 2422 E. 28th St., Los Angeles, Calif.	1	30,000	E. B. Gilmore		C. S. Bessemyer	C. S. Bessemyer	J. L. Coates	H. L. Eggleston	C. P. Boone
Gilmore-Dabney Gasoline Corp., 2422 E. 28th St., Los Angeles, Calif.	3	90,000	E. B. Gilmore		C. S. Bessemyer	C. S. Bessemyer	J. L. Coates	H. L. Eggleston	C. P. Boone
Gould, Nancy E., & Son, R.F.D. No. 6, Butler, Pa.	1	15						Floyd B. Gould	
Graham Oil & Gas Co., P.O. Box 575, Graham, Tex.	1	8,000	Philip Wiseman	Harvey S. Mudd	G. R. Paull	G.R. Paull	G. R. Paull	G. R. Paull	E. R. Marchman
Grandin-Clinger-Bell & Jennings, Tidioute, Pa.	1	350	Small partnership					Wm. Peterson	
Grimes Gasoline Co., Kennedy Bldg., Tulsa	4	14,000	Chas. W. Grimes		Otha H. Grimes			Otha H. Grimes	
Gulf Refining Co. of Louisiana, Ardis Bldg., Shreveport, La.	5	22,000	W. L. Mellon	F. A. Leovy*	W. J. Guthrie	J. E. Nelson	Wm. H. Vaughan	Wm. H. Vaughan	F. A. Ellis
Gulf Production Co., Petroleum Bldg., Fort Worth, Tex.	7	55,307	G. S. Davison	F. A. Leovy	W. J. Guthrie	J. E. Nelson		G. A. Poole	C. S. Youngblood
Gypsy Oil Co., First National Bank Bldg., Tulsa	10	87,300		Henry McGraw*	D. B. Catterlin	C. B. Clothier		H. R. Auerswald	V. C. Fuller
Hadden, John B., Henrys Mill, Pa.	1	84						John B. Hadden	
Hales & Cassidy, 1208 Hales Bldg., Oklahoma City, Okla.	1	1,000	Partnership, W. T. Hales, general manager					Charles H. Clark	
Hanlon Gasoline Co., 301 E. First St., Tulsa	3	62,500	E. I. Hanlon	D. E. Buchanan*	Lynn C. Holloway	J. H. Boyle	A. F. Wood	J. H. Boyle	V. J. Melvin
Hapgood, Roswell T., & Co., 705 Security Bank & Trust Bldg., Charleston, W. Va.	1	3,000	Not incorporated					D. T. McClure	
Harland Oil Co., Drawer A, Woico, Okla.	2	2,400	W. W. Vensel	Charles O. Duve	Charles O. Duve			Charles O. Duve	
Haskell & Baylies, Pleasantville, Pa.	1	100	Not incorporated						
Haskell & Dunham, Pleasantville, Pa.	1	50	Not incorporated					Geo. M. Anderson	
Heck, W. B., & Co., Box 164, Owensboro, Ky.	1	300	C. E. Daugherty						
Henderson Co., 815 McBirney Bldg., Tulsa	3	62,000	F. C. Henderson	J. Wood Glass	F. C. Hall	F. P. Henderson	F. C. Hall	C. C. Cherry	F. C. Hall
Henighan & Hanlon, Sistersville, W. Va.	1	200	Partnership		G. D. May	M. K. Sexton	E. D. Hanlon		
Herkness, J. Smylie, 10th & Lombard Sts., Philadelphia, Pa.	1	1,500	J. Smylie Herkness	L. C. Herkness	Wm. M. Unruh	L. C. Herkness			L. C. Herkness
Hickey & Rieg, Clarendon, Pa.	1	300	Partnership						
Highway Gasoline Co., 410 Roosevelt Bldg., Los Angeles, Calif.	2	17,000	William Ford	S. A. Reed	F. B. Gormley	S. A. Reed			T. B. Gormley
Hirt-MacDermott & Co., 407 Cappe Bldg., Fort Worth, Tex.	1	5,000	W. F. MacDermott	L. E. Hirt	J. E. Anderson	W. F. MacDermott	W. F. MacDermott	T. N. Williams	J. E. Anderson
Hokom, J., Oil & Gasoline Co., 4312 So. Broadway, Los Angeles, Calif.	1	5,000							
Honolulu Oil Corp., Ltd., 215 Market St., San Francisco, Calif.	1	50,000	A. C. Dericx	A. C. Mattei*	L. A. Cranson	W. P. Roth		R. R. McGuire	F. E. James
Hope Construction & Refining Co., 545 William Penn Way, Pittsburgh, Pa.	18	....	Christy Payne	John B. Corrin*	S. E. W. Burnside	R. D. Beardsley		Howell C. Cooper	F. O. LeRoy
Huber, J. M., Co. of Louisiana, 460 W. Thirty-fourth St., New York, N. Y.	1	4,000	J. M. Huber	H. W. Huber	C. W. Easterling	Walter Huber	H. W. Price	R. D. Morgan	E. M. Eckhart
Humble Oil & Refining Co., Main and Polk, Houston, Tex.	6	101,000	W. S. Farish	R. F. Blaffer*	F. O. Freese	R. L. Blaffer		G. E. L. Kent	
Imperial Oil & Gas Products Co., 1104 Union Bank Bldg., Pittsburgh, Pa.	1	5,000	Jos. Hartman	Homer Adams*	W. P. McNellie	W. P. McNellie	W. P. McNellie	J. C. Westfall	Jos. Hartman.
Indian Territory Illuminating Oil Co., Bartlesville, Okla.	8	160,000	H. V. Foster	Burdette Blue*	E. B. Emenhiser	C. H. Caldwell	G. V. N. Yates	D. B. Dow	E. D. Patridge
Jefferson Gasoline Co., Rayland, Ohio	1	100					J. F. Carson		J. F. Carson
Jennings, E. H., Bros. Co., 608 Columbia Bldg., Pittsburgh, Pa.	5	2,350	R. G. Jennings	E. D. Jennings	E. H. Jennings, Jr.	R. G. Jennings		E. D. Jennings	
Johnson & Myers Bros., R.F.D. 3, Tidioute, Pa.	1	175	Partnership	Ernest R. Johnson, manager					
Kanawha Oil Co., The, 608 Columbus Bldg., Pittsburgh, Pa.	3	1,000	E. D. Jennings	E. H. Jennings, Jr.	E. H. Jennings, Jr.	R. G. Jennings	J. G. Vollmer	W. H. Reardon	C. W. Freehling
Kansas Gasoline Co., 1504 Exchange Bank Bldg., Tulsa	1	5,000	J. A. Hull	Ralph C. Riley	O. J. McCann	P. F. Cole		Ralph C. Riley	P. F. Cole
Kansas Gas & Gasoline Co., United Life Bldg., Salina, Kans.	2	10,000	A. M. Patten	L. W. Johnson	Clayton E. Kline			H. R. Otto	A. H. Purdy
Kentucky Pipe Line Co., 311 W. Chestnut, Louisville, Ky.	1	2,600	J. J. O'Brien	T. B. Wilson	J. J. McKenna	J. J. McKenna	G. Davies	J. A. Yunker	G. Davies
Kewanee Oil & Gas Co., 123 S. Broad St., Philadelphia, Pa.	2	300	William M. Potts		R. B. Ashenfelter	R. B. Ashenfelter		T. B. Steele	
LaSalle Petroleum Co., 608 Wright Bldg., Tulsa	1	10,000	John A. Prescott	L. J. Lepper*	R. B. Martin	W. E. Bennett	H. P. McCoy	P. D. Williams	J. E. Tanner
Lebow, C. H., 508 Atlas Bldg., Tulsa	1	2,200						R. O. Neal	R. O. Neal
Liberty Oil & Gas Co., 343 Pa. Ave. W., Warren, Pa.	1	30	J. D. Lunn	H. C. Eba*	Ed M. Schwing	C. J. Schlehuber		William J. Wagner	Ohio Oil Co.
Lomita Gasoline Co., 2901 Orange Ave., Long Beach, Calif.	1	60,000	Ferdinand R. Bain	C. M. Cotton	F. S. Wade			J. A. Campbell	W. R. Davis
Lone Star Gas Co., 1915 Wood St., Dallas, Tex.	9	98,000	L. B. Denning	R. A. Crawford*	D. L. Cobb	D. L. Cobb	A. F. Garrett	J. R. Jarvis	B. R. Newbery
Lone Star Gasoline Co., 1915 Wood St., Dallas, Tex.	7	117,000	L. B. Denning	R. A. Crawford	D. L. Cobb	D. L. Cobb	A. F. Garrett	J. R. Jarvis	B. R. Newbery
Los Nietos Producing & Ref. Co., 714 W. 10th St., Los Angeles, Calif.	1	150,000							
Louisiana Oil Refining Corp., Ardis Bldg., Shreveport, La.	1	20,000	Henry L. Doherty	D. W. Harris	C. R. Harrison	T. H. Grobe	C. M. Lamason	R. B. Pierce	W. D. Martin
Magnolia Petroleum Co., Magnolia Bldg., Dallas, Tex.	22	122,950	E. R. Brown	B. H. Stephens*	Courtenay Marshall	W. C. Proctor	George Miller	F. M. Lege, Jr.	John P. David
Mahutska Oil Co., New Jones Bldg., Robinson, Ill.	2	1,200	J. E. Hughes	Alex V. McCandless	John T. Smith	Alex V. McCandless		A. V. McCandless	Alex V. McCandless
Masoneal Gasoline Co., 418 First Natl. Bank Bldg., Tulsa	1	1,000	D. B. Mason		J. E. Monroe	J. E. Monroe		O. Reeves	
Midco Oil Corp., Midco Bldg., Tulsa	3	30,000	H. T. Heald	C. C. Toomey	Burton French			H. W. Kelsey	
Mid-Continent Petroleum Corp., Cosden Bldg., Tulsa	9	35,700	Jacob France	George O. Moody	A. D. Kneale	Chas. Klein		F. E. Kearney	
Mid-Kansas Oil & Gas Co., Findlay, Ohio	2	27,000	R. J. Berry	W. W. Fleming	E. B. Redpath	J. L. Cook		M. E. Wagner	C. S. Sherk
Midwest Refining Co., First National Bank Bldg., Denver, Colo.	1	100,000	Thomas A. Dines	H. G. Naylor*	L. G. Truby	W. L. Greiner	H. G. Naylor		A. G. Fidel

(Continued on Page 88)

Repeat order for

Gulf Refining Company

—additions to Staten Island Storage Plant increase capacity to 2,592,000 barrels

EXTENSIONS at Staten Island—recently completed—give the Gulf Refining Company greatly increased facilities for serving the New York market.

The plant, which we designed and built in cooperation with the client's organization, occupies a 500-acre tract, stores 2,592,000 barrels of oil and includes oil pumping, drainage and steam plants, two large tank farms, 75 miles of piping, oil separating and reclaiming plant and other facilities.

The work came to us as a repeat authorization following our completion of the first unit last year.

During the past ten years, 74% of our work has been repeat orders like this from clients previously served.

Our experience is available for industrial, power, railroad and monumental undertakings anywhere in the world.

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MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

UNITED ENGINEERS & CONSTRUCTORS, INC
combining

Day & Zimmermann Engineering & Construction Co.
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The U. G. I. Contracting Co.
Public Service Production Co.
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PIPE LINES

Build
APARTMENTS
HOTELS
OFFICE & MONUMENTAL BUILDINGS

Personnel of Natural Gasoline Industry

Company and general office address—	No. plants	Daily cap'y, gallons	President	Vice President	Secretary	Treasurer	Sales Manager	Gen. Supt. of Plants	Purchasing Agent
Mohawk Petroleum Co., 806 Financial Center Bldg. San Francisco, Calif.	1	10,000	A. L. Marsten	Roy A Lee*	Miss L. M. Graves			V. K. Douglas	
Monroe-La. Carbon Co., Monroe, La.	1	2,000	Same officers as Columbian Gasoline Corp.						
Moon Gasoline Co., 624 South Cheyenne Ave., Tulsa	2	2,200	Thomas Chestnut		J. L. Goddard	M. F. Powers			
McMan Oil & Gas Co., Drew Bldg., Tulsa	4	22,000	J. A. Chapman	R. M. McFarlin*	W. G. Guiss	W. G. Guiss		G. S. Bays	M. R. Rushing
McPherson Oil & Gas Development Co., United Life Bldg., Salina, Kans.	2	22,000	A. M. Patten	L. W. Johnson*	D. H. Holmes	A. J. Berta		C. E. Brock	A. H. Purdy
National Supply Co. of Texas, P.O. Box 899, Toledo, Ohio.	1	10,000	John M. Wilson	J. A. Geismar	Chas. A. Meyer	Chas. A. Meyer		A. V. B. Candler	
Natural Gas Products Co., Los Angeles, Calif.	1	3,500	Shane Morgan	James E. Kelby	James E. Kelby	James E. Kelby		R. L. James	
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	6	9,450	F. W. Finley	Harry M. Brown	M. E. Eberle	M. E. Eberle		H. A. Frame	
Neal Gasoline Co., 507 Atlas Bldg., Tulsa	2	4,150	R. O. Neal	H. B. Neal			H. B. Neal	R. O. Neal	R. O. Neal
New York Oil Co., 107 S. Wolcott St., Casper, Wyo.	2	2,700	Emil H. Steiger	Whitney G. Case	H. C. Curtis	H. C. Curtis			
New York Petroleum Co., 402 Avery St., Parkersburg, W. Va.	2	300		H. L. Stout	B. Ferrell	M. H. Goodkind			
Nolan & Lamberton, 213 So. Olympia, Tulsa	1	50	Partnership						
North American Oil Consolidated, 351 California St., San Francisco, Calif.	1	3,000	T. C. Kieruiff	H. B. Sperry	Frank Evans			A. B. Jenks	
Norwalk Co., The, 624 So. Spring St., Los Angeles, Calif.	5	155,000	Lionel T. Barneson	H. J. Barneson	W. E. Kropp			E. L. Tobias	H. M. Paulson
O'Hara, Sarah C., 218 E. North St., Butler, Pa.	1	100	Sarah C. O'Hara		Sarah C. O'Hara	Sarah C. O'Hara	L. E. Riggle		L. E. Riggle
Ohio Oil Co., Donnell Bldg., Findlay, Ohio	44	99,502	O. D. Donnell	R. J. Berry*	E. B. Redpath	F. A. Billstone			
Oil & Gas Co., 318½ Juliana St., Parkersburg, W. Va.	1	300	Reese Blizzard	C. M. Bennett	Ross Wells	T. G. Reitz	W. O. Wells	Ira Williams	Ira Williams
Oil State Gasoline Co., Howard Bldg., Tulsa	2	6,000	Oscar R. Howard		W. J. Zollinger	C. E. Duffield		John M. Hall	
Oklahoma Gasoline Plants, Inc., 512 Berryhill Bldg., Sapulpa, Okla.	1	5,000	L. B. Jackson		W. Maurer	R. J. Ranck		E. E. Thompson	
Orfic Gasoline Production Co., 508 McBirney Bldg., Tulsa	3	10,000	A. C. H. Snyder	F. L. Townsley	M. A. Bigelow	M. A. Bigelow	E. M. Wildman		M. A. Bigelow
Owens, Libbey-Owens Gas Dept., Nichols Bldg., Toledo, Ohio	1	10,000	H. G. Phillips, H. H. Baker }	managing committee				F. F. Ketchum	Leo L. Kohlbecker
Pacific American Gasoline Co., of Texas, Box 278, Borger, Tex.	1	19,000	Howard W. Price	Walter David	Walter B. Varnes			C. B. Rose	
Pacific Western Oil Co., 714 West 10th St., Los Angeles, Calif.	3	57,500	Will C. McDuffie	R. R. Templeton	H. O. Ravis	R. J. Pagen		S. F. Magor	J. M. Grant
Pala Oil Co., Inc., 327 Atkins Ave., Shreveport, La.	1	325	F. L. Wiegand	J. M. Post	T. M. Hope	T. M. Hope		C. P. Hanlen	
Palmer Corp. of Louisiana, City Savings Bank & Trust Co., Shreveport, La.	2	30,000	H. L. Hollis	N. C. McGowen*	E. P. Summerson	A. C. Ray		F. L. Rhoads	D. R. McWilliams
Parker, H. R., Chicora, Pa.	1	125	H. R. Parker, owner						
Pep Gasoline Co., Box 309, Sedan, Kans.	1	1,800	James O'Neil Bruen	C. J. Bohner	E. W. Bruen	Jas. O'Neil Bruen		William Harmon	
Peppers Gasoline Co., Champlin Bldg., Enid, Okla.	1	5,000	Chas. C. Peppers		H. H. Champlin			O. C. Sullivan	
Phillips Petroleum Co., Phillips Bldg., Bartlesville, Okla.	46	1,129,500	Frank Phillips	L. E. Phillips*	O. K. Wing	O. K. Wing	M. E. Foster	H. E. Koopman	
Philmore Gasoline Corp., 412 Philtower Bldg., Tulsa	1	14,000	Forrest E. Gilmore	F. E. Rice*	Carl W. Gilmore	Carl W. Gilmore	Forrest E. Gilmore	Carl W. Gilmore	
Pittsburgh & West Virginia Gas Co., 435 Sixth Ave., Pittsburgh, Pa.	1	3,000	F. R. Phillips	F. P. Schauer*	W. B. Carson	C. J. Braun, Jr.	Joseph McKinley	Judson Bonsall	C. W. Lepper
Powers, M. F., 624 S. Cheyenne Ave., Tulsa	2	7,500	M. F. Powers, owner				E. C. Sager		G. A. Keefe
Powers & Quinlan, 624 S. Cheyenne Ave., Tulsa	3	2,100	Partnership						
President Oil Co., Emlenton, Pa.	2	400	Not incorporated—owned by Crawford & Gregory					H. J. Crawford	
Preston Oil Co., 99 N. Front St., Columbus, Ohio	4	40,000	C. I. Weaver	T. H. Ken	P. A. Alberty	L. A. Seyffert	R. M. Clark	G. T. Koch	G. R. Miller
Price, Harry D., Renfrew, Pa.	1	35	Harry D. Price, owner						
Producers & Refiners Corp., Prairie Bldg., Independence, Kans.	1	30,000	L. R. Crawford	R. E. Wertz*	A. W. Heinemann	O. O. Holmgren	A. T. Smith	J. A. Sartori	
Pure Oil Co., 35 E. Wacker Drive, Chicago, Ill.	9	68,100	Henry M. Dawes	R. W. McIlvain	C. H. Jay	R. W. Warner	R. W. McElroy	R. H. Carr	G. L. Parsons
Rainbow Gasoline Corp., 503 Bank of Commerce Bldg., Tulsa	1	12,000	D. S. Brooks	S. A. Brooks	F. C. Hall	F. C. Henderson			
Red River Oil Co., Drew Bldg., Tulsa	1	2,500	R. M. McFarlin	O. H. Chapman	H. G. Barnard	J. A. Chapman		G. S. Bays	M. R. Rushing
Reno Oil Co., Wells St., Statersville, W. Va.	7	760	J. P. Flynn	T. B. Gregory	W. R. Reitz	W. R. Reitz		J. P. Flynn	J. P. Flynn
Reserve Gas Co., 545 William Penn Way, Pittsburgh, Pa.	1	20,000	Christy Payne	John B. Tonkin	S. E. W. Burnside	R. D. Beardsley		Howell C. Cooper	F. O. LeRoy
Reserve Petroleum Co., Philcade Bldg., Tulsa	5	18,400	Fred Phillips	W. M. Irish, III*	Hunter Johnson	C. Y. Colgan	E. L. Henry	E. L. Henry	
Reservoir Hill Gasoline Co., 417 S. Hill St., Los Angeles, Calif.	1	25,000	L. E. Lockhart	A. M. Lockhart	L. M. Lockhart	Chas. S. Jones	J. M. Reed	R. E. Wells	H. H. Kelly
Rice Ranch Oil Co., 362 S. Los Angeles St., Los Angeles, Calif.	2	8,500	G. W. Lichtenberger	Alfred J. Bayer*	A. B. Ellis	H. G. Phillipps		Edgar Craig	
Rio Grande Oil Co., 417 S. Hill St., Los Angeles, Calif.	1	50,000	L. E. Lockhart	L. M. Lockhart*	L. M. Lockhart	Chas. S. Jones	J. M. Reed	R. E. Wells	H. H. Kelly
Roeser & Pendleton, Inc., 613 Fort Worth Bldg., Fort Worth, Tex.	1	25,000	Chas. F. Roeser	T. T. Pendleton*	H. B. Owens	H. B. Owens		G. P. Crutchfield	A. M. Brackett
R. R. Rogers Oil Co., Boling, Ill.	1	60			A. B. Cheuvront	A. B. Cheuvront			
Ryan & Hackett Co., Inc., 511 Associated Realty Bldg., Los Angeles, Calif.	1	3,000	G. P. Ryan	H. A. Hackett	Jos. H. Haring	Jos. H. Haring			
St. Helens Petroleum Co., Ltd., 1626 Western Pacific Bldg., Los Angeles, Calif.	3	5,000	Henry H. Haldin		R. H. Young		F. R. Sheller	Chas. Drader	W. H. Cowie
Sand Springs Home, Gasoline Department, P.O. Box 277, Sand Springs, Okla.	1	3,000	E. M. Monsell	Ed. A. Page	C. F. Tingley	E. M. Monsell	C. N. Stinnett	Homer Crooks	
Sandy Oil & Gas Co., Shippenville, Pa.	1	800	A. B. Collner		J. M. McLaughlin	J. M. McLaughlin			
Shamrock Oil & Gas Co., Amarillo Bldg., Amarillo, Tex.	1	12,000	John J. Sheerin	J. M. Baldridge	J. M. Baldridge	J. B. Orr		C. L. Todd	
Shell Oil Co., 200 Bush St., San Francisco, Calif.	6	256,800	C. Legh-Jones	H. R. Gallagher	A. R. Bradley	John Lander	H. R. Gallagher		J. C. Storey

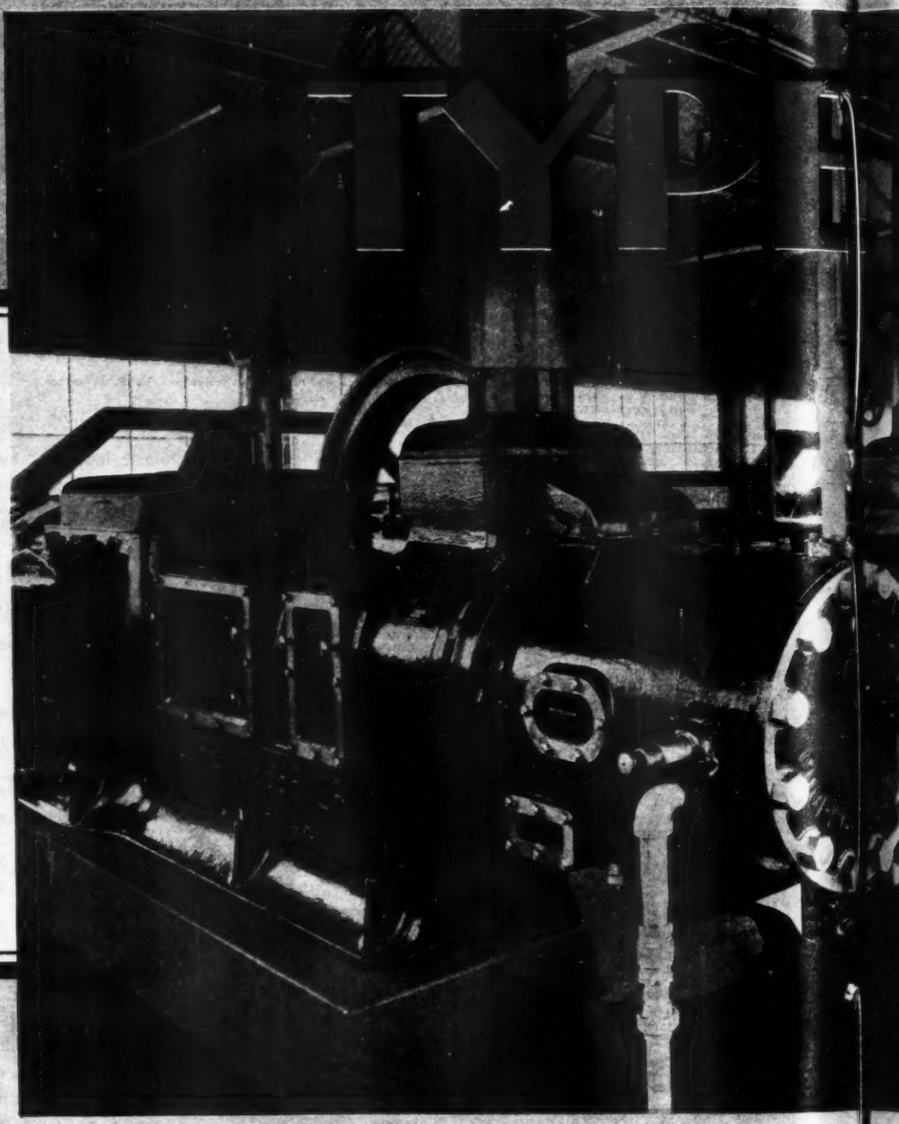
(Continued on Page 91)

Personnel of Natural Gasoline Industry

Company and general office address—	No. plants	Daily cap'y. gallons	President	Vice President	Secretary	Treasurer	Sales Manager	Gen. Supt. of Plants	Purchasing Agent
Shell Petroleum Corp., Shell Bldg., St. Louis, Mo.	12	144,000	U. deB. Daly	T. F. Lydon	P. R. Chenoweth	T. F. Lydon	L. van Eeghen	S. S. Smith	C. B. Singleton
Signal Hill Gasoline Co., 555 S. Flower St., Los Angeles, Calif.	11	182,000	R. W. Walsh	J. S. Wallace*	G. P. Lyons	G. P. Lyons		H. R. Linhoff	
Signal Oil & Gas Co., 727 W. Seventh St., Los Angeles, Calif.	10	200,500	S. B. Mosher	H. M. Mosher	O. W. March	O. W. March		R. W. Heath	
Silurian Oil Co., 704 Shell Bldg., St. Louis, Mo.	1	2,000	B. O. Mahaffey	C. F. Bushner	E. R. Christman	E. R. Christman		Dee Miller	J. B. Crisman
Simms Oil Co., Magnolia Bldg., Dallas, Tex.	2	8,000	Edward T. Moore	W. L. Todd*	L. W. Richards	D. H. Voss	George Bowers	H. A. Rike	W. J. Morrison
Sinclair Oil & Gas Co., Sinclair Bldg., Tulsa	15	398,000	H. L. Phillips	W. W. Baker	A. E. Barrus	A. E. Barrus	A. T. Scherer	C. L. Brown	H. A. Woodard
Skelly Oil Co., Skelly Bldg., Tulsa	14	211,000	W. G. Skelly	C. C. Herndon*	F. T. Hopp	F. T. Hopp	W. T. Atkins	Emby Kaye	Fred Robertson
Sloan & Zook Co., 101 Main St., Bradford, Pa.	1	1,500	R. T. Zook	Wm. J. Sloan	C. T. Rickerson	Wm. J. Sloan	Paul H. Zook	Paul H. Zook	Paul H. Zook
Snowden & McSweeney Co., 598 Madison Ave., New York, N. Y.	1	1,000	H. McSweeney	J. H. Snowden*	Pearl M. Snowden	J. R. Snowden		A. E. Baldwin	
Southern Gasoline Co., Ranger, Tex.	1	2,500	Fred C. Lewis		D. M. Trott	D. M. Trott		H. R. Hinman	
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh, Pa.	11	1,200	E. B. Reeser	E. O. Bartlett	Jas. A. Dunn	E. O. Bartlett		F. H. McQuiston	F. H. McQuiston
South Penn Oil Co., 545 William Penn Way, Pittsburgh, Pa.	60	35,000	L. W. Young, Jr.	P. H. Curry*	John L. Hayes	S. G. Hartman	W. A. Jackley	C. B. Turner	E. W. Kartlick
Southland Gasoline Co., 417 W. Sixth St., Tulsa	1	2,000	J. B. Arbon	H. M. Preston	B. H. Arbon	B. H. Arbon	B. J. Arbon	B. J. Arbon	B. J. Arbon
Southwest Production Co., 121½ W. Seventh St., Bristow, Okla.	1	3,000	F. W. Woodcock	E. A. Feltkeller*	H. P. Woodcock	C. D. Perry	B. E. Bond	B. P. Stockwell	R. L. Patten
Standard Gasoline Co., 225 Bush St., San Francisco, Calif.	38	896,175	K. R. Kingsbury	W. H. Berg*	J. H. Tuttle	V. F. Palmer		R. E. Beckley	
Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago, Ill.	5	75,446	E. G. Seubert	Allan Jackson*	F. T. Graham	C. J. Barkdull		E. J. Goldman	E. J. Bullock
Stanolind Oil & Gas Co., Philcade Bldg., Tulsa	5	47,000	F. O. Prior	A. M. McCorkle	A. M. McCorkle	A. M. McCorkle	A. M. McCorkle	D. C. Harmon	R. B. Rice
Star Gasoline Co., Sapulpa, Okla.	1	800	D. A. McDougal	J. E. Fought	T. H. Stuart	T. H. Stuart	T. H. Stuart	M. F. Phillips	T. H. Stuart
State Gasoline Corp., 900 Spring Arcade Bldg., Los Angeles, Calif.	2	37,500	J. W. Jameson	M. P. Simon	S. W. McComb	S. W. McComb		K. G. Steinbeck	
Sterling Oil & Gas Co., 861 Sayles Bldg., Abilene, Tex.	1	250	C. H. Petry	W. S. Duty	A. E. Schmitz	A. E. Schmitz		T. T. Curtis	
Stranahan & Cheuvront, 405 W. Main St., Oblong, Ill.	3	69	Partnership		A. B. Cheuvront	A. B. Cheuvront	A. B. Cheuvront	J. F. Brown	A. B. Cheuvront
Superior Oil Corp., 315 Exchange Bldg., Tulsa	1	8,500	J. Rogers, receiver					Francis Neely	H. A. Wilson
Surety Oil Co., Titusville, Pa.	1	1,000	H. A. Downs	J. A. Black	William Strance	Amos Strance	J. A. Black	J. A. Black	J. A. Black
Swiss Oil Corp., Wolf Wile Bldg., Lexington, Ky.	1	1,000	Thos. A. Combs	E. L. McDonald				E. L. McDonald, Jr.	C. D. Yocum
The Texas Company (California), 929 S. Broadway, Los Angeles, Calif.	11	355,500	R. C. Holmes	C. E. Olmsted*	E. M. Crone	C. E. Woodbridge	R. T. Herndon	N. H. Mull	C. W. Chandler
The Texas Company (Delaware), Houston, Tex.	19	178,600	R. C. Holmes	C. B. Ames*	E. M. Crone	C. E. Woodbridge			A. F. Colling
Texas Louisiana Producing & Carbon Co., Inc., 811-812 Ouachita Bank Bldg., Monroe, La.	1	7,000	R. R. Beaman	Travis Oliver	C. H. Reid	C. H. Reid			
Texas Pacific Coal & Oil Co., Fort Worth, Tex.	4	38,000	Edgar T. Marston	E. R. Lederer*	R. Seibel	R. Seibel	F. D. Bostaph	Dean Hiatt	J. C. Davis
Thomas, R. L., Tidioute, Pa.	1	250	R. L. Thomas						
Tidal Refining Co., Philcade Bldg., Tulsa	2	35,000	Noel Robinson	C. R. Barton	Y. P. Broome	K. R. Hankinson			P. W. Fenton
Tidal-Western Oil Corp., Philcade Bldg., Tulsa	1	15,000	Noel Robinson	C. R. Barton	Y. P. Broome	K. R. Hankinson			P. W. Fenton
Tompsett Bros., Tidioute, Pa.	1	275	W. C. Tompsett						
Tyler Oil Co., Wells St., Sistersville, W. Va.	4	125	H. J. Crawford	S. Messer*	W. R. Reitz	W. R. Reitz		J. P. Flynn	J. P. Flynn
Union Gas Products, Inc., 710 Ouachita Bank Bldg., Monroe, La.	1	6,000	David S. Lansden	C. M. Roos	Henry Bernstein	David S. Lansden		H. C. Walton	H. C. Walton
Union Gasoline Co., Commercial National Bank Bldg., Independence, Kans.	1	5,000	Paul R. Johnson	Donald W. Stewart	Donald W. Stewart	H. F. Mitchell		John H. Morris	W. L. Orr
Union Oil Co. of California, 617 W. Seventh St., Los Angeles, Calif.	7	237,750	L. P. St. Clair	R. D. Matthews*	John McPeak	J. M. Rust	V. H. Kelly	R. W. Carman	H. C. Farquhar
United Carbon Co., Union Bldg., Charleston, W. Va.	2	13,000	Oscar Nelson	L. S. Hornor*	G. A. Williams	T. A. Whelan	C. Riggs	H. E. Norrick	C. A. Urban
U. S. Carbon Co., 123 E. Pine St., Bastrop, La.	1	2,000		W. J. Parkes	L. W. Burrow	R. B. Todd		Ed Parkes	R. F. McBride
Veach Oil Co., Veach Bldg., Oil City, Pa.	1	30	George J. Veach		John B. Veach	John B. Veach		C. O. Mitchell	
Victor Gasoline Co., 624 S. Cheyenne, Tulsa	7	37,300	M. F. Powers	C. P. Quinlan	A. D. Blackard	Felix Quinlan		T. N. Rutherford	G. A. Keefe
Viking Gasoline Corp., Charleston, W. Va.	1	1,000	E. M. Burdette	C. L. Voress	R. W. Skoog	C. K. Gilchrist			
Viking Realty Co., Peoples Bank Bldg., Charleston, W. Va.	1	1,000	E. M. Burdette	C. L. Voress	R. W. Skoog	C. K. Gilchrist	A. Ernest MacGee	A. Ernest MacGee	H. C. Lewis
Vincennes Oil & Gas Co., Vincennes, Ind.	1	5,000	E. M. Kerlin	C. E. Kerlin	R. D. Green	R. D. Green		E. M. Kerlin	R. D. Green
Virginian Gasoline & Oil Co., Quarrier and Dunbar Sts., Charleston, W. Va.	15	178,700	H. A. Wallace	E. Reynolds, Jr.	E. Reynolds, Jr.	F. B. Fiahive	R. N. Parks	R. N. Parks	C. S. Duffield
Vollwin Gasoline Co., 1325 Glenarm St., Denver, Colo.	1	1,500	C. J. Vollmer	Fred L. Sherwin	A. M. Scully	A. M. Scully		R. B. Calvert	R. B. Calvert
Wahl, A. R., 249 E. Main St., Evans City, Pa.	1	165					A. R. Wahl	A. R. Wahl	Fred Buhl Wahl
Waggoner Refining Co., Electra, Tex.	1	10,000	W. T. Waggoner		R. L. Moore	R. L. Moore	C. F. Kolp	C. F. Kolp	
Ward Gasoline Co., P. O. Box 507, Sayre, Okla.	1	3,000	John C. Ward	W. F. Seeger	Ewell Nalle	Ewell Nalle		W. F. Seeger	
Warner-Caldwell Oil Co., Second National Bank Bldg., Titusville, Pa.	6	6,450	Alex N. Warner	J. H. Caldwell, Jr.		F. B. August		P. C. Hatfield	A. N. Warner
Warren Petroleum Co., 2001 Exchange Bank Bldg., Tulsa	1	4,500	W. K. Warren	J. A. La Fortune	H. E. Felt	A. J. Murphy		J. A. La Fortune	
Washington Development Co., Mount Vernon, Ohio	1	10,000	R. S. Lord	Robert J. Lindsay	Thomas B. Hall	B. E. Hepler		J. H. Biddison	
Wentz, L. H. (Oil Division), Ponca City, Okla.	2	15,000	Individually owned					O. H. Schoenwald	S. C. Harkness
West Coast Refining Co., 1320 Pacific Finance Bldg., Los Angeles, Calif.	2	60,000	A. H. Bradford	M. D. Schatzman	Wm. B. Ogden	Wm. B. Ogden		W. M. Bradford	
Western Oil Corp. of Texas, 1010 Thompson Bldg., Tulsa	1	3,000	J. F. Darby	Geo. W. Snedden	Carl Pursel	C. F. Lynde	J. R. Gilbert	J. R. Gilbert	J. R. Gilbert
Western Gasoline Corp., Exchange National Bank, Tulsa	1	3,000	W. K. Warren	J. A. La Fortune	H. E. Felt	H. E. Felt	H. E. Felt	Don Smith	J. A. La Fortune

(Continued on Page 94)

ANOTHER SMOOTH



Largely responsible for the remarkable smoothness, load handling ability and endurance of these two-cycle units is the Cooper-Bessemer Improved Power Cylinder. It has wider exhaust bridges, with positive water-circulation; increased inlet and exhaust-port capacity; better scavenging; better lubrication throughout; a smooth, accurate bore; and a greatly increased cooling-water space. A long-lived Cylinder Head and an efficient Gas Economizer are included.

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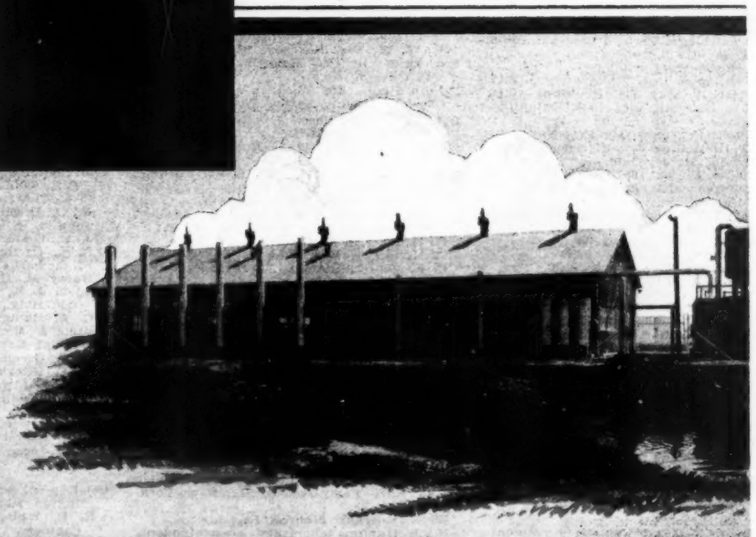
Waxed floors, well-groomed engines, and spotless surfaces promote efficient and economical operation in this spick-and-span compressor station of Industrial Fuel Supply Company at Venice, California. Compressor equipment consists of three Cooper-Bessemer 200 B. H. P. Type-10's. These gas engine driven twin units carry an overload with ease and perform with extreme smoothness. The exhaust lines are operated dry, being air-jacketed throughout. The result is a cool station and a quiet exhaust.



to gauge engine values. Smoothly this ne at Venice show the peak ith i proved Cooper-Bessemer Type- g oil nd gas companies on the west llin power at extremely low cost. Typ 10 *Bulletin.*

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Dallas, Texas
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640 E. 61st St.
Los Angeles, California
Suite No. 301, 25 W. 43rd St.
New York, N. Y.

Personnel of Natural Gasoline Industry

Company and general office address—	No. plants	Daily cap'y. gallons	President	Vice President	Secretary*	Treasurer	Sales Manager	Gen. Supt. of Plants	Purchasing Agent
Western National Gasoline Corp., Commercial Exchange Bldg., Los Angeles, Calif.	1	10,000	R. Florian	A. W. Taylor	L. J. Hart	L. J. Hart		William Walker	
Westoak Gasoline Co., P. O. Box 507, Sayre, Okla.	2	38,000	T. J. Butler	W. F. Seeger	Ewell Nalle	Ewell Nalle	W. F. Seeger	W. F. Seeger	W. F. Seeger
Western States Gasoline Corp., 609 S. Grand, Los Angeles, Calif.	1	150,000	C. R. Gallagher	Ellsworth McGowan	G. C. O'Connell			W. N. Roper	
Wilcox, H. F., Oil & Gas Co., Wilcox Bldg., Tulsa	2	4,000	H. F. Wilcox	G. A. Dye*	L. J. Yarbrough	M. P. Appleby	A. M. Ballard	F. H. Dunn	E. B. Ward
Wilshire Oil Co., Inc., 2455 E. Twenty-seventh St., Vernon, Calif.	1	150,000	Alfred P. Machris		Alfred P. Machris		M. M. Fletcher	W. D. Smith	C. S. Hough
Wirt Gasoline Co., Bradford, Pa.	1	500	Nathan Nichols					N. Nichols	N. Nichols
Wiser Oil Co., Trico Bldg., Sistersville, W. Va.	1	2,000	E. A. Durham	M. B. Hutchinson*	L. E. Gregg	L. E. Gregg	H. G. Ellis	H. G. Ellis	J. C. Watkins
Wolverine Petroleum Corp., Shell Bldg., St. Louis, Mo.	4	18,000	U. deB. Daly	J. C. van Eck*	P. R. Chenoweth	P. R. Chenoweth	L. van Eeghen	S. S. Smith	C. B. Singleton
Wright, J. H., Estate, 1700 S. Main St., Sapulpa, Okla.	1	5,000	Rosa B. Wright, executrix				M. L. Murphy	A. B. Nigh	

*ADDITIONAL VICE PRESIDENTS

Barnsdall Oil Co.—E. O. Bartlett.
Bell Oil & Gas Co.—Albert Finston.
Big Lake Oil Co.—W. S. Hallanan, A. B. Daly, Jr., W. W. Bruce.
Calumet Oil Co.—A. J. McDermott.
Carbide & Carbon Chemicals Corp.—H. E. Thompson, R. W. White.
Carter Oil Co.—Richardson Pratt.
Coltexo Corp.—C. Harold Smith.
Columbian Gasoline Corp.—C. Harold Smith.
Continental Oil Co.—W. W. Bruce, E. J. Nicklos.
Deep Rock Oil Corp.—F. C. Gordon, R. J. Graf, L. B. Riddle, W. E. Moody, E. J. McKay, B. L. Majewski.
Devonian Oil Co.—L. C. Ritts.
Empire Oil & Refining Co.—H. D. Fruecauff, W. A. Jones, H. R. Straight, Floyd C. Brown, A. W. Ambrose.
Equitable Gas Co.—C. S. Mitchell.
Federal Oil & Gas Co.—M. M. Bauer.
Franklin, Wirt, Petroleum Corp.—C. A. Franklin, F. M. Head, E. Galt.
Fullerton Oil Co.—H. M. Dailey.
General Petroleum Corp. of California—R. A. Sperry, S. J. Dickey, R. E. Maynard.
Gulf Refining Co. of Louisiana—C. R. Minor.
Gypsy Oil Co.—K. Winship.
Hanlon Gasoline Co.—E. H. Boyle.
Honolulu Oil Corp., Ltd.—W. M. Alexander, C. E. Green, W. P. Roth, A. P. Welch.
Hope Construction & Refining Co.—John B. Tonkin.
Humble Oil & Refining Co.—H. C. Wiess, F. P. Sterling, W. W. Fondren, J. S. Bonner, James Anderson.
Imperial Oil & Gas Products Co.—Paul A. Hartman, Joseph W. Hartman.
Indian Territory Illuminating Oil Co.—C. H. Caldwell, R. L. Gordon, A. V. Hoenig.
LaSalle Petroleum Co.—W. J. Schnur.
Liberty Oil & Gas Co.—C. J. Schlehuber.
Lone Star Gas Co.—F. L. Chase.
Magnolia Petroleum Co.—W. H. Francis, W. C. Proctor, E. E. Plumly, F. V. Faulkner, E. P. Angus, J. C. Stephens, D. C. Stewart, D. A. Little, Ralph H. Kinsloe.
McMan Oil & Gas Co.—H. H. Rogers, John Rogers, H. G. Barnard, E. B. McFarlin.
Midwest Refining Co.—H. C. Bretschneider, G. H. Jaques.
Mohawk Petroleum Co.—Edwin V. McKenzie.
McPherson Oil & Gas Development Co.—E. R. Duree.
Ohio Oil Co.—J. K. Kerr, John McFadyen, C. L. Fleming.
Palmer Corp. of Louisiana.—R. H. Hargrove, O. H. Simonds, E. W. Hill, L. H. Parkhurst.
Phillips Petroleum Co.—J. H. Kane, Clyde Alexander, William N. Davis, H. E. Koopman, J. M. Sands, J. S. Dewar, P. J. McIntyre, C. R. Musgrave, F. E. Rice, H. A. Trower.
Philmore Gasoline Corp.—O. K. Wing.
Pittsburgh & West Virginia Gas Co.—C. S. Mitchell.
Producers & Refiners Corp.—John Fertig.
Reserve Petroleum Co.—C. Y. Colgan.
Rice Ranch Oil Co.—E. T. Off.
Rio Grande Oil Co.—Charles S. Jones, A. M. Lockhart.
Roeser & Pendleton, Inc.—M. R. Young.
Shell Petroleum Corp.—Richard Airey, W. Gould, A. Fraser, Dr. W. van Holst Pellekaan, G. S. Rollin, L. van Eeghen, Dr. F. W. L. Tydeman.
Signal Hill Gasoline Co.—A. M. Kelley.
Simms Oil Co.—F. R. Schneider.
Skelly Oil Co.—H. M. Stalcup, R. H. Lyons, W. T. Atkins.
Snowden & McSweeney—J. P. Shannon.
South Penn Oil Co.—T. J. Huffman.
Southwest Production Co.—B. P. Stockwell.
Standard Gasoline Co.—R. W. Hanna, A. S. Russell.
Standard Oil Co. of Indiana—R. H. McElroy, E. J. Bullock, R. E. Humphreys, C. J. Barkdull, A. W. Peake.
The Texas Company of California—J. A. Bermingham, R. T. Herndon, W. K. Holmes, W. S. S. Rodgers.
The Texas Company of Delaware—T. J. Donoghue, F. T. Manley, G. L. Noble, R. Ogarrio, T. Rieber, W. S. S. Rodgers.
Texas Pacific Coal & Oil Co.—O. E. Mitchell.
Transcontinental Oil Co.—M. W. Bottomfield, J. M. Holliday, J. C. Adams.
Tyler Oil Co.—J. P. Flynn.
Union Oil Co. of California—W. W. Orcutt, P. N. Boggs, W. L. Stewart, Jr., Paul M. Gregg.
United Carbon Co.—C. E. Slagle, T. S. Reed, Jr.
Wilcox, H. F., Oil & Gas Co.—F. H. Dunn, M. P. Appleby.
Wiser Oil Co.—A. C. Jackson, W. L. Sutton.
Wolverine Petroleum Corp.—T. F. Lydon.

Superintendents of Gasoline Plants

The annual survey of the natural gasoline industry contains the names of plant superintendents, chief engineers and chief chemists. A large number of companies do not employ engineers and chemists. The following report gives the information obtainable by companies:

A

Amerada Petroleum Corp., Petroleum Bldg., Tulsa:
H. W. Harts, chief engineer.
W. H. Williams, Box 299, Ardmore, Okla.
J. W. Kerney, Box 686, Healdton, Okla.
George D. Crandall, Box 1023, Okmulgee, Okla.
V. W. Roberts, Drawer C, Fry, Tex.
E. P. Tidwell, Box 596, Earlsboro, Okla.
E. G. Lyons, Harjo, Okla.
E. F. Tidwell, Box 1257, Seminole, Okla.
I. N. Journeycake, Route 7, Oklahoma City, Okla.
American Oil Development Co., 1414 Oliver Bldg., Pittsburgh, Pa.:
Samuel E. Hoover, Frow, W. Va.
John H. Petty, Fly, Ohio.
H. G. Bradfield, New Matamoras, Ohio.
George H. Hays, Box 136, Robinson, Ill.
John Hays, Sistersville, W. Va.
Arab Gasoline Corp., Eastland, Tex.:
C. L. Thompson, chief chemist.
R. S. Railey, Eastland, Tex.
Arkansas Natural Companies, Ardis Bldg., Shreveport, La.:
J. H. Mobley, chief engineer.
S. Cunnington, Drawer D, El Dorado, Ark.
C. Zeppa, Route 2, Box 66, Louann, Ark.
E. P. Farmer, Box 272, Monroe, La.
T. F. Smithson, Box 252, Plain Dealing, La.
L. A. Clements, Box 668, Homer, La.
T. F. Gordon, Box 1734, Shreveport, La.
Carl Witschey, c/o Arkansas Fuel Oil Co., Robinson, Ill.

B

Bankline Oil Co., 634 So. Spring St., Los Angeles, Calif.:
Jack Brennan, 2602 E. Willow St., Signal Hills, Calif.
Barco Gasoline Co., 1309 East Fifteenth St., Tulsa:
J. W. Archer, Wirt, Okla.
Barnsdall Oil Co., Petroleum Bldg., Tulsa:
E. E. Troyer, Box 254, Avant, Okla.
J. O. Green, Box 515, Earlsboro, Okla.
R. W. Shannon, Box 856, Bergs, Okla.
G. R. Nicholas, Box 228, Osage, Okla.
C. C. Voris, Box 2032, Tulsa, Okla.
A. H. Saylor, Route 2, Box 178, Oxford, Kans.
F. C. Goughler, Drawer A, Barnsdall, Okla.
Barnsdall Oil Co. of California, twelfth floor Commercial Exchange Bank Bldg., Los Angeles, Calif.:
R. B. Hastings, chief engineer.
R. L. Fortune, Box 68, Goleta, Calif.
Bartlett Gasoline Co., 303 Wright Bldg., Tulsa:
George Kerr, chief chemist.
D. E. Foster, chief engineer.
E. W. Melling, Box 467, Butler, Okla.
Big Lake Oil Co., Benedum-Trees Bldg., Pittsburgh, Pa.:
John Moor, chief chemist.
Clarence Hickle, Texon, Tex.
Boisa Chica Oil Corp., 410 Roosevelt Bldg., Los Angeles, Calif.:
Guy E. Davies, Box 1025, Ventura, Calif.

C

Calumet Oil Co., 517 I. W. Hellman Bldg., Los Angeles, Calif.:
J. C. Armstrong, Fillmore, Calif.
Carbide & Carbon Chemicals Corp., 30 East Forty-second St., New York, N. Y.:
C. N. Schaffner, Clendenin, W. Va.
C. M. Stuter, Hastings, W. Va.
C. E. Center, Diamond, W. Va.
Carter Oil Co., Tulsa:
G. A. Shaner, chief chemist.
F. W. Bruner, Carter Nine, Okla.
George W. Cain, Box 787, Wilson, Okla.
P. A. Ratliff, Box 758, Cromwell, Okla.
A. E. Perry, Route 2, Seminole, Okla.
Clinger Oil & Gas Co., Tidioute, Pa.:
T. E. Peterson, Route 3, Tidioute, Pa.
C. R. Boyd, Truemans, Forest County, Pennsylvania.
Coline Gasoline Corp., Railway Exchange Bldg., Chicago, Ill.:
D. R. Van Gorder, Box 728, Torrance, Calif.
J. L. Black, Box G-2, Ventura, Calif.
Coltex Corp., Monroe, La. (Executive office 45 East Forty-second St., New York, N. Y.):
W. E. Reardon, Monroe, La.
H. J. Hunter, laboratory superintendent, Fairbanks, La.
A. T. Givens, engineer, Monroe, La.
J. P. Cox, superintendent Texas district, Lefors, Gray County, Texas.
T. F. Williams, assistant district superintendent, Lefors, Gray County, Texas.
E. A. Lovell, Lefors, Gray County, Texas.
G. H. Stevens, Lefors, Gray County, Texas.
W. R. Wise, Lefors, Gray County, Texas.
Columbian Gasoline Corp., Monroe, La. (Executive office, 45 East Forty-second St., New York, N. Y.):
W. E. Reardon, Monroe, La.
H. J. Hunter, laboratory superintendent, Fairbanks, La.
A. T. Givens, engineer, Monroe, La.
R. A. Boyd, superintendent Louisiana district, Fairbanks, La.
R. E. Biggs, R. F. D. 1, Rayville, La.
J. S. Dunn, Swarts, La.
H. S. Peters, Bastrop, La.
J. F. Morris, Perryville, La.
B. F. Spigner, Fairbanks, La.
J. P. Savell, Fairbanks, La.
J. P. Cox, superintendent Texas district, Lefors, Gray County, Texas.
H. G. Stevenson, Shamrock, Tex.
Comar Gasoline Co., Shell Bldg., St. Louis, Mo.:
S. W. Craig, Marland, Okla.
Comar Oil Co., Shell Bldg., St. Louis, Mo.:
M. R. Church, Braman, Okla.
Continental Oil Co., Continental Bldg., Ponca City, Okla.:
C. C. Chaffee, chief chemist.
E. O. Bennett, chief engineer.
John L. Hill, assistant superintendent.
J. C. Wood, Ponca City, Okla.
R. A. Carter, Burkburnett, Tex.
F. C. Parks, Wellington, Colo.
Harry M. McCabe, Columbine, Wyo.
Cosden, J. S., Inc., (Oklahoma), 1700 Electric Bldg., Fort Worth, Tex.:
G. A. Bumgardner, Lovell, Okla.
Crosbie & Moran, Inc., 1616 Exchange National Bank Bldg., Tulsa:
G. B. Green, chief chemist.
R. F. Brown, chief engineer.
A. B. Caldwell, Box 715, Earlsboro, Okla.
D. B. Young, Box 247, Marshall, Okla.
L. D. Hare, Box 1737, Konawa, Okla.
R. G. Dwen, Jr., Box 84, Pearson, Okla.
S. M. Barrett, c/o Crosbie, Porter & Martin, Inc., Box 625, Okemah, Okla.

D

Del Rey Oil & Refining Co., Ltd., 422 Washington Bldg., Los Angeles, Calif.:
R. B. Whitton, chief chemist and chief engineer.
E. F. Jones, 21 Avenue 42, Venice, Calif.
Desdemona Gasoline Co., 421 Capps Bldg., Fort Worth, Tex.:
L. E. Hirt, chief engineer.
D. H. Moss, Desdemona, Tex.
Dewey Portland Cement Co., Dewey, Okla.:
R. A. Loveland, chief chemist.
E. R. Check, chief engineer.

E

Eagle-Picher Mining & Smelting Co., 214 West Third St., Joplin, Mo.:
W. N. Corbet, Henryetta, Okla.
Edington-Wiltz Refining Co., Ltd., 570 Subway Terminal Bldg., Los Angeles, Calif.:
W. A. Stanley, Inglewood, Calif.
Empire Gas & Fuel Co., Ltd., Wellsville, N. Y.:
Guy Harder, Andover, N. Y.
Empire Oil & Refining Co., Bartlesville, Okla.:
Clay Briggs, chief engineer.
W. H. Yingling, Arkansas City, Kans.
J. F. Hodge, Tallant, Okla.
V. F. Hobart, Box 193, Wichita, Kans.
E. Williams, R. F. D., Teter, Hamilton, Kans.
L. A. Webster, Madison, Kans.
C. E. Aydelotte, Box 188, Thrall, Kans.
Lloyd Toland, Box 476, Madison, Kans.
E. R. Estus, Box 395, Seminole, Okla.
L. L. Grubb, Box 1638, Konawa, Okla.
W. H. Tillock, Box 395, Seminole, Okla.
C. F. Fischer, Box 1205, Seminole, Okla.
D. G. Thoes, Box 1686, Pampa, Tex.
J. A. Dowler, Box 1638, Konawa, Okla.
J. L. Sperry, Box 739, Asher, Okla.
Enfisco Oil Corp., 214 Court Arcade, Tulsa:
D. E. Sanders, Tulsa.
Equitable Gas Co., 435 Sixth Ave., Pittsburgh, Pa.:
Judson Bonsall, chief engineer.
G. M. Myers, Rogersville, Greene County, Pennsylvania.
E. O. Bouch, R. F. D. 1, Clarksville, Pa.
O. O. Field Gasoline Corp., 112 West Seventh St., Los Angeles, Calif.:
A. L. Henrickson, Box 211, Huntington Beach, Calif.
I. H. Westmoreland, Box 832, Maricopa, Calif.

F

Fleming, J. E., Titusville, Pa.:
B. H. Crippen, Grand Valley, Pa.
Franklin, Wirt, Petroleum Corp., Franklin Bldg., Ardmore, Okla.:
C. C. Chaney, Capitol Hill, Oklahoma City, Okla.
J. A. Looker, Capitol Hill, Oklahoma City, Okla.
Fullerton Oil Co., R. F. D. No. 2, Box 72, Fullerton, Calif.:
N. J. Allen, Fullerton, Calif.

G

General Petroleum Corp. of California, Higgins Bldg., Los Angeles, Calif.:
G. F. Olsen, chief chemist.
V. F. Grace, chief engineer.
H. W. Havins, Box 386, Buena Park, Calif.
J. L. McMahon, 311 Burnside Ave., Los Angeles, Calif.
H. S. Donovan, Ventura, Calif.

(Continued on Page 95)

Getty, George F., Gasoline Co., 1060 Subway Terminal, Los Angeles, Calif.:
C. O. Libbey, chief chemist.
J. J. Murphy, chief engineer.
R. C. Colvin, 2930 Live Oak St., Huntington Park, Calif.
Gilmore, Forrest E., Co. (J. H. Brooks, receiver), Beacon Life Bldg., Tulsa:
H. M. Hogue, Kelleyville, Okla.
C. H. Bridges, Lima, Okla.
O. H. Stanbrough, Lima, Okla.
Gilmore Gasoline Plant No. 1, 2423 East Twenty-eighth St., Los Angeles, Calif.:
Lee Schandoney, chief chemist.
E. Newman, chief engineer.
W. Shellshear, 2140 Walnut Ave., Long Beach, Calif.
Gilmore Dabney Gasoline Corp., 2423 East Twenty-eighth St., Los Angeles, Calif.:
Lee Schandoney, chief chemist.
E. Newman, chief engineer.
W. Shellshear, 2140 Walnut Ave., Long Beach, Calif.
Gould, Nancy E., & Son, R. F. D. 6, Butler, Pa.:
Floyd B. Gould, chief engineer.
Graham Oil & Gas Co., Box 575, Graham, Tex.:
G. L. Marchman, chief engineer.
Grimes Gasoline Co., Kennedy Bldg., Tulsa:
J. D. McQuillen, Box 533, Okemah, Okla.
Joe Gibson, Weleetka, Okla.
H. B. Trickey, Weleetka, Okla.
R. F. Chisolm, Keystone, Okla.
Gulf Refining Co. of Louisiana, Ardis Bldg., Shreveport, La.:
F. M. Seibert, chief chemist.
J. C. Phillips, chief engineer.
W. F. Harding, Mooringsport, La.
F. J. Doerge, Homer, La.
H. Gandy, Griffin, Ark.

H

Hales & Cassidy, 1208 Hales Bldg., Oklahoma City, Okla.:
Gus Matlock, chief engineer.
Hapgood, Roswell T., & Co., 705 Security Bank & Trust Bldg., Charleston, W. Va.:
Wiley Price, Cedar Grove, W. Va.
Harland Oil Co., Wolco, Okla.:
D. C. Bohnsack, Wolco, Okla.
J. L. Cobb, Wolco, Okla.
E. B. Vensel, Barnsdall, Okla.
Heck, W. B., & Co., Box 164, Owensboro, Ky.:
W. D. Kelsay, Monticello, Ky.
Henderson Co., The, 813 McBirney Bldg., Tulsa:
C. C. Cherry, chief engineer and plant superintendent, El Dorado, Ark.
G. N. Cook, Sanford, Tex.
Hickey & Rieg, Clarendon, Pa.:
John M. Hickey, Clarendon, Pa.
Highway Oil Refining Corp., Philcade Bldg., Tulsa:
J. R. Pringle, 2223 East Thirteenth St., Tulsa.
Honolulu Oil Corp., Ltd., 215 Market St., San Francisco, Calif.:
W. H. Kraft, chief chemist, Taft, Calif.
L. A. Cranson, chief engineer.
E. R. Pratt, Taft, Calif.
H. S. Stark, Taft, Calif.
S. Richmond, Taft, Calif.
Hope Construction & Refining Co., 545 William Penn Way, Pittsburgh, Pa.:
Howell C. Cooper, chief engineer.
W. B. Gribble, Clarksburg, W. Va.
L. L. Tonkin, Clarksburg, W. Va.
C. C. Reed, Clarksburg, W. Va.
Humble Oil & Refining Co., Main and Polk, Houston, Tex.:
C. M. Gribble, chief chemist.
W. O. Stowell, chief engineer.
J. R. McDermott, Box 193, Rising Star, Tex.
W. B. Calhoun, Iraan, Tex.
Joe Miller, Corsicana, Tex.
W. A. Hutsell, Luling, Tex.
G. A. Griffin, Jacksonville, Tex.
G. L. McCormick, Bellville, Tex.

I

Imperial Oil & Gas Products Co., 1104 Union Bank Bldg., Pittsburgh, Pa.:
W. A. Knapp, chief chemist, Monroe, La.
Boyd Gaither, chief engineer, El Dorado, Ark.
J. C. Westfall, El Dorado, Ark.
Indian Territory Illuminating Oil Co., Bartlesville, Okla.:
Dana Hefley, chief chemist.
T. A. Stevens, district superintendent, Oklahoma City, Okla.
Paul Shankey, Oklahoma City, Okla.
C. D. Reynolds, Oklahoma City, Okla.
H. Wingo, Oklahoma City, Okla.
C. Campbell, Oklahoma City, Okla.

J

Jennings, E. H., Brothers Co., 608 Columbia Bldg., Pittsburgh, Pa.:
W. J. Beggs, Noblestown, Pa.
N. H. Reardon, Jacksonburg, W. Va.

K

Kanawha Oil Co., 608 Columbia Bldg., Pittsburgh, Pa.:
N. H. Reardon, Jacksonburg, W. Va.
Kansas Gas & Gasoline Co., United Life Bldg., Salina, Kans.:
R. B. McLaughlin, chief chemist.
W. J. White, chief engineer.
E. S. Newton, McPherson, Kans.
H. B. Matthews, Medicine Lodge, Kans.
Kansas Gasoline Co., 1504 Exchange Bank Bldg., Tulsa:
J. L. Looney, chief engineer and superintendent, Box 1007, Winfield, Kans.
Kewanee Oil & Gas Co., 123 South Broad St., Philadelphia, Pa.:
T. B. Steele, Robinson, Ill.

L

LaSalle Petroleum Co., 608 Wright Bldg., Tulsa:
W. W. Watson, chief chemist.
P. D. Williams, Box 995, Burkburnett, Tex.
Lomita Gasoline Co., 2901 Orange Ave., Long Beach, Calif.:
L. V. Cassaday, Box 669, Long Beach, Calif.
Louisiana Oil & Refining Corp., Ardis Bldg., Shreveport, La.:
W. W. McElroy, Cotton Valley, La.
Lebow, C. H., 508 Atlas Bldg., Tulsa:
William Simpson, Drumright, Okla.

M

Magnolia Petroleum Co., Magnolia Bldg., Dallas, Tex.:
R. D. Hanley, chief engineer.
Mid-Continent Petroleum Corp., Cosden Bldg., Tulsa:
F. C. Bach, Box 886, Shamrock, Okla.
F. G. Weller, Box 97, Leonard, Okla.
B. T. Weidner, Box 507, Covington, Okla.
R. H. Corbin, Box 357, Morris, Okla.
J. A. Blakemore, Box 785, Cromwell, Okla.
C. C. Wolford, Box 11, Stroud, Okla.
Mid-Kansas Oil & Gas Co., Findlay, Ohio:
I. R. Collier, chief engineer.
G. M. Cook, Drawer B, Bristow, Okla.
W. E. Smith, Box 277, Eliasville, Tex.
Midwest Refining Co., First National Bank Bldg., Denver, Colo.:
P. G. Weidner, chief engineer.
A. C. Andrews, Midwest, Wyo.
Mohawk Petroleum Co., 806 Financial Bldg., San Francisco, Calif.:
C. W. Fisher, 20 Avenue 44, Venice, Calif.
Moon Gasoline Co., 624 South Cheyenne Ave., Tulsa:
P. D. Bragg, Box 267, Bixby, Okla.
Charles Bender, Route 4, Box 40, Muskogee, Okla.

N

National Supply Co. of Texas, P. O. Box 899, Toledo, Ohio:
H. C. LeBouf, chief chemist.
O. D. Hardaway, chief engineer.
E. C. Smith, Box 552, Shamrock, Tex.
Neal Gasoline Co., 507 Atlas Bldg., Tulsa:
L. W. Blair, Osage, Okla.
L. C. Cruppen, Copan, Okla.
Nolan & Lamberton, 212 South Olympia, Tulsa:
W. E. Russell, R. F. D., Oblong, Ill.
Norwalk Co., The, 634 So. Spring St., Los Angeles, Calif.:
H. C. Strobel, Santa Fe Springs, Calif.
D. R. Taylor, Bin WW, Raft, Calif.

O

Ohio Oil Co., Donnell Bldg., Findlay, Ohio:
E. B. Charlton, Louisiana district, Shreveport, La.
John Denton, Illinois district, Bridgeport, Ill.
J. R. Thorpe, Illinois district, Robinson, Ill.
Burr Farr, Grass Creek district, Casper, Wyo.
George Sowards, Salt Creek district, Casper, Wyo.
H. T. Henton, Lance Creek district, Casper, Wyo.
Nathan Trogden, Rock River district, Casper, Wyo.
Oil & Gas Co., 318½ Juliana St., Parkersburg, W. Va.:
W. O. Wells, Harrisville, W. Va.
Oil State Gasoline Co., Howard Bldg., Tulsa:
E. E. Stepp, Jenks, Okla.
C. W. Stepp, Yale, Okla.
Orfic Gasoline Production Co., 508 McBirney Bldg., Tulsa:
E. G. Hatfield, Cleveland, Okla.
C. Cutting, Desdemona, Tex.
Owens, Libbey-Owens Gas Department, Nicholas Bldg., Toledo, Ohio:
Dr. O. Fischer, geologist, Charleston, W. Va.
W. B. Strong, chief engineer, Charleston, W. Va.

P

Pacific American Gasoline Co. of Texas, Box 278, Borger, Tex.:
C. B. Rose, Box 278, Borger, Tex.
Pacific Western Oil Co., 714 W. Tenth St., Los Angeles, Calif.:
C. A. Gates, 4361 Chase Ave., Venice, Calif.
F. L. Pack, Drawer 86, Goleta, Calif.
J. H. Dunwoody, Drawer Z, Ventura, Calif.
Pala Oil Co., Inc., 327 Atkins Ave., Shreveport, La.:
C. P. Hanlen, Mooringsport, La.
Peppers Gasoline Co., Champlin Bldg., Enid, Okla.:
C. R. Williamson, Enid, Okla.
Phillips Petroleum Co., Phillips Bldg., Bartlesville, Okla.:
A. H. Riney, chief engineer.
Philmore Gasoline Corp., 412 Philtower Bldg., Tulsa:
John F. Barton, Box 123, Bryson, Tex.
Pittsburgh & West Virginia Gas Co., 435 Sixth Ave., Pittsburgh, Pa.:
Judson Bonsall, chief engineer.
Archie Stutler, Hundred, Wetzel County, W. Va.
Powers, M. F., 624 S. Cheyenne Ave., Tulsa:
L. Flanagan, Depew, Okla.
R. B. Paris, Hasel, Okla.
Powers & Quinlan, 624 S. Cheyenne Ave., Tulsa:
Felix Quinlan, Box 696, Beggs, Okla.
Preston Oil Co., 99 N. Front St., Columbus, Ohio:
G. J. Baxter, Pavonia, Richland County, Ohio.
Lester D. Myers, Homer, Ohio.
H. T. Holland, Sugar Grove, Ohio.
W. V. Wonderby, Sugar Grove, Ohio.
R. D. Weaver, 147 Kirn Bldg., Lancaster, Ohio.
Producers & Refiners Corp., Prairie Bldg., Independence, Kans.:
H. D. Fiautt, Casper, Wyo.
Pure Oil Co., 35 E. Wacker Drive, Chicago, Ill.:
C. R. Wagner, chief chemist.
C. M. Downing, Drumright, Okla.
I. F. Patterson, Oilton, Okla.
H. A. Horner, Healdton, Okla.
W. R. Waggoner, Dawes, W. Va.
Thomas Gibson, Depew, Okla.
J. W. Crump, Seminole, Okla.
Jack Swift, Seminole, Okla.
George W. Edwards, Seminole, Okla.
John Prater, Van, Tex.

R

Reserve Gas Co., 545 William Penn Way, Pittsburgh, Pa.:
Howell C. Cooper, chief engineer.
W. B. Gribble, Clarksburg, W. Va.
L. L. Tonkin, Clarksburg, W. Va.
C. C. Reed, Clarksburg, W. Va.
Reserve Petroleum Co., Philcade Bldg., Tulsa:
C. W. Warwick, Box 9, Louann, Ark.
E. L. Clover, Box 172, Haynesville, La.
R. S. Hancock, Box 428, Shamrock, Okla.
Tom Evans, Box 338, Barnsdall, Okla.
Rice Ranch Oil Co., 262-266 S. Los Angeles St., Los Angeles, Calif.:
Edgar Craig, Orcutt, Calif.
Reservoir Hill Gasoline Co., 417 S. Hill St., Los Angeles, Calif.:
J. A. Scofield, Whittier, Calif.
Rio Grande Oil Co., 417 S. Hill St., Los Angeles, Calif.:
J. A. Scofield, Whittier, Calif.
Roeser & Pendleton, Inc., 613 Fort Worth Bldg., Fort Worth, Tex.:
C. A. Davis, chief engineer, Albany, Tex.

S

St. Helens Petroleum Co., Ltd., 1026 Western Pacific Bldg., Los Angeles, Calif.:
C. Z. Webb, chief chemist and chief engineer, Box D, Pico, Calif.
G. C. Sproule, Box 248, Montebello, Calif.
J. A. Statts, Box M, Taft, Calif.
Sand Springs Home—Gasoline Department, Box 277, Sand Springs, Okla.:
Homer Crooks, Box 308, Oilton, Okla.
Shamrock Oil & Gas Co., Amarillo Bldg., Amarillo, Tex.:
H. O. Simmons, McLean, Tex.
Shell Petroleum Corp., Shell Bldg., St. Louis, Mo.:
C. E. Stewart, Hobbs, N. M.
W. F. Burcham, Stroud, Okla.
I. M. Gardner, Yale, Okla.
E. H. Ross, Drumright, Okla.
E. H. Ross, Mannford, Okla.
C. E. Hains, Pampa, Tex.
L. Lamar, Oxford, Kans.
C. McGuire, Seminole, Okla.
C. E. Smith, Marshall, Okla.
F. Hegwer, Maud, Okla.
W. H. Harding, Box 127, Capitol Hill Sta., Oklahoma City, Okla.
Skelly Oil Co., Fourth and Boulder Streets, Tulsa:
E. A. Todd, chief chemist.
T. E. Armstrong, Box 178, Stinnett, Tex.
E. K. Anderson, Box 157, Lyman, Okla.
L. Barrett, Box 413, Wynona, Okla.
J. E. Carlson, Box 127, Skellytown, Tex.
R. L. Creager, Box 536, Seminole, Okla.
James T. Crawford, Box 168, Bristow, Okla.
F. H. Crist, Box 168, Bristow, Okla.
E. J. Haslam, Box 336, Whittenburg, Tex.
C. A. Holmes, Box 952, Burkburnett, Tex.
M. S. Pike, Box 577, Davenport, Okla.
L. B. Roberts, Box 67, Maramec, Okla.
Ben Wesner, Box 168, Slick, Okla.
Sloan & Zook Co., 101 Main St., Bradford, Pa.:
Harry Johnson, Kane, Pa.
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh, Pa.:
J. W. Bookman, Schley, Ohio.
V. P. Stover, Sycamore Valley, Ohio.
R. W. James, Pleasantville, Pa.
C. R. Jeannerat, Elmo, Clarion & Miola, Clarion, Pa.
Roy Litzenberg, Volant, Pa.
R. D. McMurry, R. F. D. 7, Butler, Pa.
C. A. Cousten, Middlebourne, W. Va.
C. D. Hebrock, Porters Falls, W. Va.
Arthur Cousten, Macfarlan, W. Va.
C. C. Williford, Eureka, W. Va.
South Plains Pipe Line Co., Independence, Kans.:
J. S. Legate, chief chemist, Amarillo, Tex.
Standard Gasoline Co., 225 Bush St., San Francisco, Calif., Los Angeles office:
T. L. Taggart, contract department.
L. H. Vane, contract department.
D. M. Wolfe, technical department.
G. N. Hile, technical department.
R. R. Adams, personnel officer.
J. J. Keely, chief clerk.
C. R. Burgess, engineer of design.
E. W. Frey, engineer.
J. W. Hauk, master mechanic.
R. S. Ridgway, mechanical engineer.
Signal Hill Gasoline Co., 555 S. Flower St., Los Angeles, Calif.:
M. L. Arnold, chemist.
D. M. Hodges, engineer.
C. E. Gotterba, Box 7, Long Beach, Calif.
C. E. Ward, Box K, Taft, Calif.
Silurian Oil Co., 704 Shell Bldg., St. Louis, Mo.:
R. E. Hilpert, chief engineer.
E. Davis, Avant, Okla.
Simms Oil Co., Magnolia Bldg., Dallas, Tex.:
Frank Gardner, chief engineer.
Sinclair Oil & Gas Co., Sinclair Bldg., Tulsa:
S. R. Evans, chief chemist.
E. A. Wooden, chief engineer.
George Raby, Box 68, Cleveland, Okla.
George H. Youker, R.F.D. 1, Drumright, Okla.
W. D. Dolan, Box 578, Shamrock, Okla.
B. C. Sharrett, Box 368, Covington, Okla.
W. S. Yates, Box 398, Hominy, Okla.
L. M. Kelsey, Box 6, Shidler, Okla.
L. F. Kneeland, Box 368, Cromwell, Okla.
L. N. Yates, Box E, Kenbro, Kans.
F. B. Pearce, Box 865, Seminole, Okla.
K. R. Elliott, Box 787, Seminole, Okla.
Charles O'Donnell, Box 103, Pearson, Okla.
L. C. Van Cleave, R.F.D. 7, Capitol Hill, Oklahoma City, Okla.
V. H. Akers, Box 297, Sasakwa, Okla.
Lewis Snyder, Box 1106, Seminole, Okla.
H. L. Allen, Box 59, R.F.D. 1, Wewoka, Okla.
Stanolind Oil & Gas Co., Philcade Bldg., Tulsa:
Plant foremen:
G. C. Martin, Desdemona, Tex.
A. T. Campbell, Burkburnett, Tex.
H. U. Jarrett, Tonkawa, Okla.
Carl Law, Desdemona, Okla.
R. W. Davis, Gilliam, La.
State Gasoline Corp., 900 Spring Arcade Bldg., Los Angeles, Calif.:
K. G. Steinbeck, Route 1, Box 240, Long Beach, Calif.
Sterling Oil & Gas Co., 861 Sayles Blvd., Abilene, Tex.:
Elmer Overman, Sperry, Okla.
Stranahan & Cheuvront, 405 W. Main St., Oblong, Ill.:
James F. Brown, Oblong, Ill.
Superior Oil Corp., 415 Exchange National Bank Bldg., Tulsa:
Oscar Harned, chief engineer, Box 598, Earlsboro, Okla.
Swiss Oil Corp., Wolf Wile Bldg., Lexington, Ky.:
Forest Clarkson, Fixer, Ky.

T

Texas Company, The (California), 929 S. Broadway, Los Angeles, Calif.:
H. H. Maddren, producing, drilling and gasoline division, Los Angeles, Calif.
H. S. Cole, Jr., producing, drilling and gasoline division, Los Angeles, Calif.
Texas Company, The (Delaware), Houston, Tex.:
M. J. Adams, North Texas division, Wichita Falls, Tex.
T. F. O'Brien, West Texas-New Mexico division, Cisco, Tex.
J. L. Shea, Louisiana-Arkansas division, Shreveport, La.
C. C. Kelly, Oklahoma-Kansas division, Tulsa, Okla.
Texas Pacific Coal & Oil Co., Fort Worth, Tex.:
E. W. Zublin, chief chemist.
H. H. Truitt, chief engineer.
Clarence Brousteadt, Caddo, Tex.
Jack White, Thurber, Tex.
Tidal Refining Co., Philcade Bldg., Tulsa:
R. S. Stanfield, Box 1118, Drumright, Okla.
W. L. Tinsley, Glenpool, Okla.
Tidal-Western Oil Corp., Philcade Bldg., Tulsa:
W. S. Phillips, R.F.D., Middlebourne, W. Va.
Frank Burns, R.F.D., Fly, Ohio.

U

Union Oil Co. of California, 617 W. Seventh St., Los Angeles, Calif.:
F. M. Penter, northern division, Orcutt, Calif.
J. C. Rector, southern division, Santa Fe Springs, Calif.
United Carbon Co., Union Bldg., Charleston, W. Va.:
C. R. Park, chief chemist.
J. Simpson, Monroe, La.
A. J. McKinnon, Monroe, La.
E. L. Baron, Monroe, La.
J. T. Little, Monroe, La.
L. H. Davis, Monroe, La.

V

Victor Gasoline Co., 624 S. Cheyenne, Tulsa:
P. A. Burch, Box 1625, Drumright, Okla.
L. J. Rush, Box 272, Bristow, Okla.
D. B. Gilmore, Box 152, Davenport, Okla.
W. H. Dobson, Box 397, Seminole, Okla.
V. B. Smith, Box 511, Seminole, Okla.
A. C. Brunner, Box 397, Seminole, Okla.
J. J. Powers, Box 1215, Seminole, Okla.
Virginian Gasoline & Oil Co., Quarrier and Dunbar Streets, Charleston, W. Va.:
H. W. Critchfield, Sandyville, W. Va.
Mark H. Griffith, Kermit, W. Va.
R. A. Cyrus, Ona, W. Va.
W. H. Evilsizer, Villa Route, Box 38, Charleston, W. Va.
J. F. Byerly, Clendenin, W. Va.
Silas Clark, Pad, W. Va.
Owen Wheeler, R.F.D. 1, Catlettsburg, Ky.
W. F. Burdette, Three Mile, W. Va.
S. M. Pittman, R.F.D. 1, Box 82, Charleston, W. Va.
R. C. Patterson, Elkview, W. Va.
Harry F. Haught, Box 172, Spencer, W. Va.
R. E. Parcell, R.F.D. 2, St. Albans, W. Va.
Ray Grabeel, Box 292, Louisa, Ky.
George Kiser, Hubhall, W. Va.
George S. Robinson, Box 162, Mammoth, W. Va.
Lee Buffington, Blue Creek, W. Va.
C. H. Copenhaver, Stoffel, W. Va.

W

Wahl, A. R., 249 E. Main St., Evans City, Pa.:
Fred Buhl Wahl, 202 N. Jackson St., Evans City, Pa.
Ward Gasoline Co., Box 507, Sayre, Okla.:
Herman Cornett, Box 108, Breckenridge, Tex.
Warner-Caldwell Oil Co., Second National Bank Bldg., Titusville, Pa.:
P. C. Hatfield, Nowata, Okla.
A. N. Warner, Titusville, Pa.
Warren Petroleum Co., 2001 Exchange National Bank Bldg., Tulsa:
Don Smith, Box 148, Kellyville, Okla.
Wentz, L. H. (oil division), Ponca City, Okla.:
G. M. Ford, Three Sands, Okla.
West Coast Refining Co., 1320 Pacific Finance Bldg., Los Angeles, Calif.:
B. M. Hennessey, Placentia, Calif.
Western Oil Corp. of Texas, 1010 Thompson Bldg., Tulsa:
M. E. Bray, chief engineer.
J. R. Gilbert, Box 216, Electra, Tex.
Western States Gasoline Corp., 509 So. Grand Ave., Los Angeles, Calif.:
W. N. Roper, Box 7, Coalinga, Calif.
Wilcox, H. F., Oil & Gas Co., Wilcox Bldg., Tulsa:
W. R. Bingham, chief engineer.
J. A. Berry, Pampa, Tex.
J. B. Hill, Bristow, Okla.
Wilshire Oil Co., Inc., 3455 E. Twenty-seventh St., Vernon, Calif.:
L. A. Seppi, Vernon, Calif.
Wiser Oil Co., Trico Bldg., Sistersville, W. Va.:
H. J. Brooks, R.F.D. 1, Chelsea, Okla.
Wolverine Petroleum Corp., Shell Bldg., St. Louis, Mo.:
S. U. Young, Avant, Okla.
S. U. Young, Bartlesville, Okla.
R. R. Dollins, Wilson, Okla.
Wright, J. H., estate, 1700 S. Main St., Sapulpa, Okla.:
A. B. Nigh, chief engineer, Kellyville, Okla.

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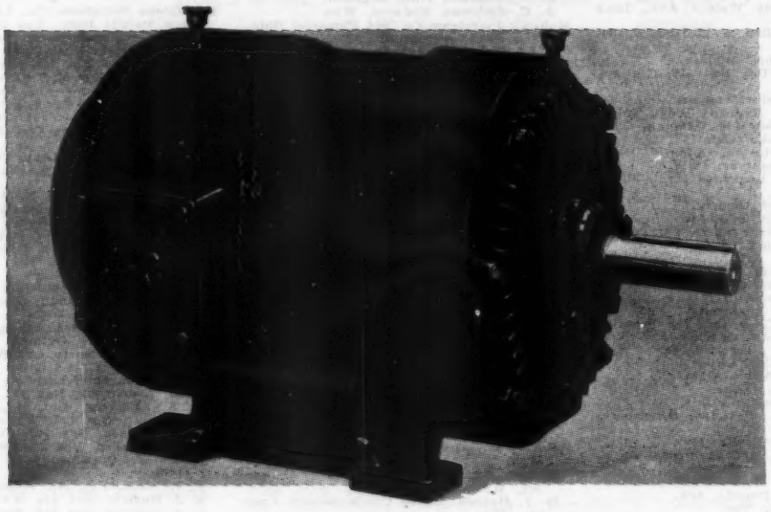

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The Allis-Chalmers Explosion-proof Motor is approved for use in hazardous atmospheres, *Gasoline*, (*Pyroxylin Lacquer Vapor*) such as are encountered in oil refineries, gasoline plants, dry cleaning plants, paint, varnish and lacquer plants . . . and similar industries.

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The use of extra long seals to prevent the escapement of flame and cool the gases below the point of ignition, together with unusual sturdiness to safely resist stresses due to possible internal explosions or flashes . . . make this the most practical explosion-proof motor ever developed.

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ALLIS-CHALMERS

Allis-Chalmers Manufacturing Company, Milwaukee

Seven Gas Wells, Two Dry Holes in East

One Duster in Southeast Ohio, Other in Southwest Pennsylvania. Five Scattered Gas Completions in West Virginia

By Staff Correspondent

PITTSBURGH, Pa., May 18.—Seven gassers and two dry holes comprised the total of the drilling operations completed in the Eastern fields during the week. Five of the gassers are in West Virginia, and the remaining two are in Ohio, as is one of the dry holes. The other dry hole is reported from the Southwest Pennsylvania Field.

SOUTHEAST OHIO

The two gassers reported from Ohio are in Muskingum County. The Ohio Fuel Gas Co. completed its test on the Joseph Hale farm, Lot 5, Falls Township, at 3,695 feet. This well is producing 500,000 feet of gas from the Clinton sand. The Atha Oil Co. drilled its test on the W. H. Doty farm in the SW, Section 12, Washington Township to 3,977 feet and in the Red Rock. Gas was found at 3,870 feet and in the Clinton sand, and at this depth this well is producing 500,000 feet.

The Preston Oil Co. completed its test on the Edward Wilt farm, Section 6, Perry Township, Coshocton County, in the Clinton sand, where it was found dry.

Drilling in Ohio

In Carroll County, Eaton and others have drilled their No. 8 on the Nelson E. Slates farm in Louden Township to 1,100 feet, and the 1,200-foot level has been reached in their No. 4 on the Jennie Chase property in the same township. The Lisbon Oil & Gas Co. and others' No. 4 on the James M. Hanna farm in Center Township, has been drilled to 1,200 feet. George W. Elliott and others have their No. 3 at 1,250 feet on the H. G. Buchanan farm in Louden Township.

Bauman and others are rigged up on the Elmer VanSycle farm in Reading Township, Section 5, Perry Township. In Harrison Township, same county, David L. Melick, trustee, has a rig erected on the H. E. Stoneburner farm in Section 18. Rigs have also been built for tests by the Wehrle Co. on the Wolfe heirs' property, Section 31, Clayton Township, and the W. G. Perrigo & Co. on the J. A. and W. E. Donnelly farm, Section 1, Jackson Township.

In Muskingum County, the Fritz Oil & Gas Co. has drilled its test on the B. F. Floyd farm in Section 3, Brush Creek Township, down to 3,980 feet. The Ohio Fuel Supply Co. is rigged up on the C. H. Harrop farm, Section 5, Brush Creek Township, and in Clay Township, William Cline and others have a rig standing on the Howard H. Doyle farm, Section 3.

West Virginia

The five gassers reported from the West Virginia Field are located in scattered counties. The Cole and Crane Real Estate Co.'s property in Washington district Boone County, is the location of a 1,000,000-foot gasser belonging to the Pond Fork Oil & Gas Co. This well, No. 10, was drilled 2,439 feet and in the Berea sand. Wiseman and Jackson have a very fair gasser in their test on the Albert Wilson farm in Washington district, Calhoun County. This well is producing from 1,328 feet and in salt.

The test of Harry L. Tennant on the Augusta Mercer Heirs farm in Paw Paw district, Marion County, was drilled deeper to the Fifth sand, found at 3,127 feet. From this sand and at this depth this test is a small gasser. The Pittsburgh & West Virginia Gas Co. drilled deeper its No. 5,078 on the Philip Shuman farm in Battelle district, Monongalia County. The Gordon stray gas sand was found at 3,365 feet, and from this sand the company has a light gasser. The Manufacturers Light & Heat Co. brought in its No. 3,474 on the August Wendt farm in Liberty district, Marshall County at 1,803 feet as a gasser.

The Daniel O'Day estate shot its No. 3 on the J. B. Markey farm on Sheep Run in Grant district, Ritchie County, in the Salt sand, and it is showing for from 25 to 30 bbls. per day. This well was previously reported as No. 4 with a 2-bbl. production.

In Ritchie County, C. H. McClure has drilled his second test on the Israel Weekley farm in Grant district 1,734 feet where it is waiting on a test. In the same district, the Cairo Oil Co. has its No. 3 on the J. B. Markey down to 1,684 feet and H. N. Rinehart has his No. 6 on the T. E. Moore farm at 1,485 feet. Both wells are waiting on tests.

Drilling in West Virginia

The test of C. C. Wolfe on the Sig. Adkins farm in Union district, Wayne County, is drilling at 2,780 feet. The Wayne United Gas Co. is shut down at 1,720 feet in the drilling of its No. 40 on the A. W. Wilson heirs property in Lincoln district, and the same operators have made location for No. 49 on this farm. The Owens-Illinois Glass Co. has also made a location in Lincoln district on the T. A. Copley farm. In Butler district, the Chartiers Oil Co. has selected a location on the W. W. Large farm.

In Cabell County, the General Gas Co. has reached the 2,000-foot level on the L. E. and W. L. Kinnard farm in Grant district, and in McComas district, the Monickle Gas Co. has its test on the B. D. Morrison farm down 1,550 feet. Wilson and Nowery had a show of gas at 3,063 feet on the Oppenhine and Wolfe tract in Barboursville district, but they continued the drilling of this well and it is now down to 3,145 feet. The Harshbarger Oil & Gas Co. has a rig standing for a second test on the J. A. and Oscar Conner farm in Grant district, and in McComas district, R. H. Adkins and others have made location on the B. L. Perry farm. The West Virginia Gas Corp. is moving a rig in on the W. P. Earl farm in Barboursville district.

In Jackson County, the Pine Knot Oil Co. has its test on the J. T. Phillips farm in Washington district, shut down after drilling it down to a depth of 2,200 feet. In Logan County, M. V. Jennings, trustee, has reached 965 feet in the drilling of his test in Chapmansville district. The Hope Natural Gas Co. is fishing for the drilling tools in No. 7,515 on the Cole and Crane tract in Triadelphia district. On the Dingus Run Coal Co.'s tract in Logan district, the West Virginia Gas Co. has made location for well No. 27.

The Owens-Illinois Glass Co. has a rig standing on the Joseph Orth farm in Grant district, Marion County. In Court House district, Lewis County, W. C. Johnson also has a rig standing on the John Brown farm. In the process of drilling its test deeper on the E. D. Fittro farm in Coal district, Harrison County, the Washington Gas Co. is shut down at 2,374 feet.

A. E. Ellis and others have drilled their test on the Harley Gainer farm on the waters of Laurel Run in DeKalb district, Gilmer County, to 300 feet, and McCall and others are at the 2,000-foot level in their test on the W. A. Moore farm in DeKalb district. The Hope Natural Gas Co. is drilling its old well, No. 6,251, deeper on the M. V. Gainer farm in the same district. This well, on the waters of Third Run, has been drilled 2,150 feet. It produced oil and gas from the Injun sand prior to the decision of its owners to drill it to deeper sands. Frank Golden and others have erected a rig on the H. E. Engle heirs property in DeKalb district.

In Kanawha County the United Fuel Gas Co. is drilling its old No. 4,262 deeper. This well is on the J. W. Ashbaugh farm in London district. The 4,500-foot level has been reached. The Ten Mile Oil & Gas Co.'s No. 11 on the H. C. Dickinson farm in Malden district is ready for a test. Godfrey L. Cabot has constructed a rig on the William P. Tompkins farm in the same district for No. 5, and the Owens-Illinois Glass Co. has constructed a rig and has part of the necessary tools on the ground for No. 10 on the C. Q. Crockett property. On the Williams Coal Co. tract in Cabin Creek district the Pure Oil Co. is ready for drilling No. 254, and the material is on the ground for No. 255. The Cannelton Coal Co. has selected locations on the Cannelton Coal Co. tract in Cabin Creek district for Nos. 15, 16 and 17, on the Quincy Coal Co. tract in the same district. Godfrey L. Cabot is building a road to the location selected for No. 19. A location has been made by the Kendall Oil & Gas Co. for No. 5 on the Frank J. Kendall farm in Elk district.

R. C. Waggoner and others have reached 1,880 feet in the drilling of their test on the William Living farm in Burning Springs district, Wirt County, on the waters of Straight Fork. The same operators have completed the construction of a rig for a second test and have started drilling. The 400-foot level has been reached by the Heck Oil Co. in the drilling of its No. 3 on the J. E. and J. G. Watkins farm in Reedy district, Wirt County, but at this depth the well is shut down.

SOUTHWESTERN PENNSYLVANIA

The only operation completed in the Southwest Pennsylvania Field during the week was the dry hole on the Charles Behning farm. This operation was a test by Charles Behning & Co. and was completed at 2,750 feet. The Behning farm is in the Brush Creek district, Jefferson Township, Butler County.

D. L. Shafer & Co. shut down their test on the William Jones farm in Wayne Township, Greene County, after drilling it 850 feet. The Carnegie Natural Gas Co. is drilling on the F. G. Jacobs farm in Center Township at the 450-foot levl, and J. B. Orndoff is at the 400-foot level on the J. E. Scott farm. The Manufacturers Light & Heat Co. skidded its rig again at No. 3,443 on the Felix Bell farm in Wayne Township.

The Natural Gas Co. of West Virginia's No. 703 has been drilled to 2,900 feet. This well is on the S. A. Post farm in South Franklin Township, Washington County. M. Green & Co. have reached 1,500 feet on the John Craig property in Donegal Township. Potts Brothers have erected a rig on the A. Woodruff farm in Chartiers Township on the location they selected for a test.

FLOW OF WELLS IN TURNER VALLEY TO BE RESTRICTED TO 40 PER CENT

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, May 16.—Following a conference with oil operators at Edmonton in March, the Alberta provincial government has issued regulations restricting the flow of Turner Valley wells to 40 per cent of normal open flow. The purpose is to reduce as far as possible the waste of gas, pending the securing of commercial markets. With most of the Turner Valley wells more or less back pressure had previously been used.

New Oil Regulations

New regulations governing oil and gas development in Alberta have also been issued by the government. The regulations are expected to become effective June 1. For the most part the old Dominion government regulations are followed. There are 14 main points of difference, summarized as follows:

The minmum area that may be leased is 160 acres, as against 20 acres.

Persons becoming indebted for rentals cannot acquire a new location until all rental arrears have been liquidated.

Expenditure acceptable in satisfaction of rental will be determined by actual footage drilled, exclusive of cost of machinery and casing. Under Dominion regulations the amount expended in development exclusive of machinery and casing could be credited on rentals.

Grouping of leases (for purposes of rental credit(is restricted to 20,000 acres; locations not to be separated by a greater distance than 3 miles and the grouping to comprise an area rectangular in form not exceeding 650 square miles, the length not to exceed two times the breadth. Formerly there was no limit as to district so long as the locations to form the group were separate by a distance not greater than 2 miles and the whole restricted to 20,000 acres.

Credit for excess expenditures is limited to 25 per cent applicable on locations grouped; whereas formerly it ranged from 10 to not more than 50 per cent.

Where a royalty is in arrears or an attempt is made to defraud the government by withholding any part of the revenue, a lease may be canceled.

When a lease is canceled for any reason the rights will immediately be offered at auction; and, if the rights are not bought, they will the following day become available for application.

Provision is made for leasing for oil and gas of a location where coal beds or seams are being or about to be worked.

Lessees are required to pay all taxes imposed by municipal, improvement, school, irrigation and drainage districts.

Use of water flush drills is prohibited except on such terms and conditions as may be prescribed.

Surface rights shall be protected, and no lessee may enter upon any land until satisfactory arrangements have been made, by mutual consent or through arbitration, with the surface owner. Under the Dominion regulations, arbitration was conducted in the case of patented lands, but where the lands were under terminable grant the lessee was required to put up a bond.

Provision is made for a greater supervision of certain mechanical operations.

The setting aside of crown reservations has been discontinued.

The first draft of the regulations was made by John Harvie, director of lands and mines, and William Calder, supervisor of petroleum and natural gas resources; it was then submitted to the advisory board on natural resources, and

(Continued on Page 134)

Gas Main Activity in Central West

Central Ohio, Michigan and Indiana Are More Interested in Search for Gas Than Oil at Present Time

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, May 18.—In the Central West Field just now most wells are looking for natural gas. Central Ohio is the largest gas producer and Michigan is destined to develop many gas wells in the shallow holes throughout the southeastern portion of the State.

In the Illinois Field the only report shows a well abandoned by Knox & Robinson, No. 1 on the Otter & Pittman property, Lot 6, Section 21, Sugar Loaf Township, St. Clair County, in the western part of the State.

The old Lima Field failed to report any new completions, although several are getting down toward the top of the Trenton. The Sandusky Gas Co. is drilling on the D. S. Hostler farm, Section 3, Hopewell Township, Seneca County. Arthur Geyer is nearing sand in No. 3 F. E. Baldwin farm, Section 30, Clinton Township, same county.

C. W. Sapp has shut down his No. 1 on the J. W. Miller farm, Section 32, Jackson Township, Sandusky County.

Wiser Oil Co. is drilling No. 5 Grant Geiger farm, Section 12, Cessna Township, Hardin County. Jupiter Oil Co. is drilling No. 1 George A. Matthews farm, Section 18, Pleasants Township, same county.

Gebhart and others are drilling on the Walter Rogers, Section 2, Fitchville Township, Huron County, near Norwalk.

CENTRAL OHIO

Seven completions were reported from the Central Ohio Field, with two oil producers with an initial of 65 bbls., 1 dry hole, 4 gas wells, while in new work starting there were 7 locations and 8 wells started spudding, a total of new work of 15.

In Muskingum County, Hopewell Township, Hopewell Gas & Fuel Co. has a test on the Laura VanAllen farm, Section 7, which produced 30 bbls. initial along with some natural gas from 3,135-84 feet. Fritz Oil & Gas Co. is drilling No. 1 W. W. Swingle farm, Section 29, Bush Creek Township, same county.

In Medina County, Chatham Township, the Edson Co.'s No. 14 Archie Packard farm, Lot 6, same township, produced an initial of 35 bbls. from 320-47 feet. Barnhart and others made a location on the J. A. Holshoe farm, Section 17, Homer Township, same county.

In Ashland County, Montgomery Township, the Commonwealth Gas Corp. is drilling on the John A. Stone farm, Section 3, Montgomery Township.

In Lorain County, Columbia Township, the Ohio Fuel Gas Co. has a gas well in No. 1-5,487 O. R. Crocker farm, Lots 71 and 72, and Dillon & McFredericks got a dry hole on the Louis Gest farm, Lot 72. This well found the upper Clinton from 2,671-78 feet and the lower Clinton from 2,693-96 feet, there being no showing in either.

In Knox County, Howard Township, Upham Gas Co.'s test on the Frank Magers farm, Lot 17, is a light gas producer from 2,660-2,721 feet.

In Summitt County, White & Bacon are drilling No. 2 W. C. Rech farm, Section 7, Greene Township.

Athens County

In Athens County, York Township, Frank O'Mara has a light gas well in No. 11 on the Hocking-Athens Coal Co.'s land, Section 35, from the Clinton formation from 3,137-70 feet, total depth of hole, 3,173 feet. Chartiers Oil Co. is drilling No. 1 Dora A. Wilson farm, Section 17, same township.

In Stark County, Jackson Township, Medford Oil & Gas Co. has a light gas producer on the Lantz & Clovie farm, Section 25. The gas was found from 4,470-89 feet, and drilled deeper from 4,491-4,515 feet, the lower depth being dry. Stoltz Oil & Gas Co. abandoned its location on the E. B. Erlanger farm, Section 26, same township. F. A. Brendall and others drilling on the T. J. and F. A. Lesser farm, Section 12, Lawrence Township, same county.

H. E. Perkins made a location on the C. R. Lovering farm, Lots 5 and 9, Chester Township, Morrow County.

INDIANA

A three days' trip over the Indiana fields shows more activity for natural gas than oil. The outstanding test visited was the well of J. D. Overless on the Fred McManus farm, Section 13, Ripley Township, Rush County, and southeast of Indianapolis, and west of Connersville, which showed 500,000 feet of gas, and will bring about more drilling in that immediate vicinity, especially near the town of Carthage, in the northwest part of the county.

Two other gas wells of interest were found in Monroe County, where the Ohio Oil Co. and the Petroleum Exploration Co.'s test on the Ray Ealy farm, NE, Section 5, Benton Township, which showed 681,000 feet with a 225-pound pressure at a total depth of 863 feet. Same parties' No. 2 on the M. M. Young heirs farm, SE NW, Section 7, same township, showed 879,000 feet at 710 feet. Saddle Creek Oil Co.'s No. 1 Derbin-Hessler farm, Section 4, Polk Township, same county, has shut down on top the Trenton limestone, and will drill in later.

In Knox County, Busseron Township, the James H. Gardner Petroleum Co.'s No. 1 well, 660 feet from the south and west lines of the J. P. Beard farm, NE, Section 10, had a slight oil showing, but not sufficient for a commercial producer at 1,004 feet and was abandoned. Same company's test on the M. M. Hall farm, NW, Section 14, same township, which also had a light oil showing, was dry at a total depth of 1,529 feet.

In Daviess County, in the southwestern part of the State, the Knox Engineering Corp. struck 250,000 feet on the B. Frank McCord farm, NE, Section 35, Barr Township, at 430 feet. The well shows 100 pounds rock pressure. Ben D. Ruble's test on the Oscar Sellers farm, NE, Section 9, same township, was a dry hole. James E. Young is drilling on the William E. Wallace farm, NE NE, Section 36, Veale Township, same county, and Hartman and others are drilling No. 3 Sylvester Swan farm, Section 18, same township.

In Sullivan County, Wade Connelly's test on the R. B. Gilbert farm, NW, Section 29, Haddon Township, was dry at a total depth of 825 feet.

In Pike County, James E. Young's second test on the William Lamb farm, SW, Section 28, Washington Township, developed into a dry hole.

In Adams County, Blue Creek Township, in the old northeastern part of Indiana, the Ohio Oil Co. abandoned No. 5 D. Dudgeon farm, Section 5, and the Bermuda Oil & Gas Co. abandoned old No. 8 on the D. Studebaker farm, Section 8, Jefferson Township, same county.

In Gibson County, Columbia Township, the test of the Indiana Southwestern Gas Corp. is reported down to a depth of 4,300 feet which is the Silurian in No. 1 on the L. W. Gudgell farm, Section 25. It is south of Olamd City, and shut down for further orders.

Word has been received from the extreme southern part of Indiana that a real gusher had been developed by Conyers & Bugg in a second test on the Lee Adler farm, SW, Section 19, Clark Township, at a shallow depth of 214 feet, and showing for better than 200 bbls., some reports stating it is a much larger producer, some rating it close to 1,500 bbls. No. 3 has been started on the same property and northeast of the development in the Owensboro Field of Kentucky. The pay sand is the Big Lime formation, and no 24-hour test could be made owing to a shortage of storage.

Santa Fee Oil Co. has started No. 3 on the Mary Berg farm, in Huff Township, Spencer County.

In Vanderburg County, the Vanderburg Oil Co. is drilling No. 4 on the George Hornby farm, Center Township.

A rig is on the ground for an important test by H. J. Hauck and others on the John Siddles farm, SW, Section 4, Lincoln Township, LaPorte County, about 20 miles southwest of South Bend and about 7 miles almost direct south of New Carlisle. Work was started last Monday on erecting the rig, which is close to the hamlet of Mill Creek along the highway and in the northeast part of the Kankakee Valley.

KENTUCKY

The outstanding feature of Kentucky for the week is what looks like an extensive gas area, miles from production of either gas or oil, and promising the natural gas hunter opportunity at a very shallow depth. This wildcat was drilled by the G. M. C. Oil & Gas Co. on the B. F. McDonald farm, approximately 3 miles from the town of Ghent, along the Ohio River, and close to 10 miles northeast of Carrollton, the county seat of Carroll County, at a depth of 315 feet. The pressure was so strong Manager Cameron was unable to cap the well, and had to get material from Winchester to shut in the hole. The new well is not far removed from the Gallatin County line, which lies east of Carroll County, and across the Ohio River from Indiana, northeast of Louisville, and southwest of Cincinnati. The well has a strong pressure and a good volume, at least that is the report and additional tests are being started in the vicinity. The G. M. C. Oil & Gas Co. is drilling a second test in the field on the Robert Furnish farm, 2,000 feet north of the McDonald farm gasser. Same company staked locations for No. 1 Dallas Schurmer, also for No. 1 Scottie Smith farm, in the same area. Several other locations are in the making and a real drilling play is looked for. The bringing in of the well in Carroll County will cause much leasing along the Ohio River from Cincinnati southwest to the Mississippi River, as the average operator prefers gas at this time, there being a ready market for gas along the Ohio River.

Oil development work has slacked down in all parts of Kentucky, owing to the low price of crude, therefore completions are few and far between. In the Greenville Field of Muhlenberg County, the H. & K. Producers Co.'s No. 3 on the H. F. Lee farm, near the town of Weir came in a dry hole at 1,400 feet, and No. 4 same farm, was dry at a total depth at 822 feet. No. 1, same farm, was brought in last month and was dry at 1,610 feet, while No. 2 produced an initial of 25 bbls. at 794 feet. These wells are to the south of Greenville.

TENNESSEE

Many of the cities of Tennessee are making a strong effort to secure natural gas for heating purposes, of which there seems to be plenty at comparatively shallow depths. Negotiations for a natural gas franchise have turned the eyes of oil producers toward Knoxville, says the Knoxville Journal. Two letters, inquiring about the natural gas franchise for Knoxville, were in the files of the city manager, for presentation to the city council. One of the communications was from Harry F. Brewer, vice president of the United Eastern Gas Co. of New York, saying that company was investigating the Knoxville territory and considering the possibility of piping natural gas to Knoxville. The company would provide the natural gas for Knoxville through the Kentucky-owned Eastern Gas Co.

Extensive gas reserves of 120,000,000,000 feet with additional reserve of 10,000,000,000 feet are owned by the Eastern Gas Co., according to a letter from Mr. Brewer. A pipe line to Pineville, Ky., has been completed and franchises have been obtained for Harlan and Middlesboro, Ky., by the company, according to the letter.

Campbell Jones of Bowling Green, Ky., asked for information concerning the proposed natural gas franchise at Knoxville, saying parties who own gas territory within 70 miles of Knoxville were interested in the project and would like to bid for the contract.

The Knoxville Journal further states: "Survey of natural gas possibilities for Knoxville and upper eastern Tennessee cities will be completed in a couple of weeks, Manager H. C. Bonner of the Knoxville Gas Co. said. Representatives of the City Service Co., with which the Knoxville Gas Co. is affiliated, are making a study of the nautral gas field and market conditions in that area. Besides Knoxville, natural gas possibilities for Morristown, Greenville, Johnson City, Bristol, Kingsport and other cities in this territory are being studied, Mr. Bonner said. Prospects for piping natural gas from southern Kentucky to Knoxville and upper east Tennessee cities are being investigated."

In Franklin County, Tennessee, J. H. McGuire's No. 1 along the Nashville Pike, a mile north of Winchester, reported a fair gas producer.

In Morgan County, Sunbright Field, Benedum-Trees Co. got a good gas well at between 1,350-1,400 feet, and the Eastern Tennessee Oil & Gas Co.'s No. 3 in the same field, is a fair gas well.

REMOVING PIPE LINE

MUSKEGON, Mich., May 16.—The largest oil pipe line in the Muskegon Field is being taken up by the Stanolind Oil & Gas Co., successors to the Dixie Oil & Pipe Line Co., it was announced today. Oil production of the Stanolind company on several leases in both the Muskegon and Laketon Township areas of the field has been sold to the Naph-Sol Refining Co., operator of a 1,500-bbl. refining plant on M-20 at the Pere Marquette Railroad in the heart of the Muskegon Township area.

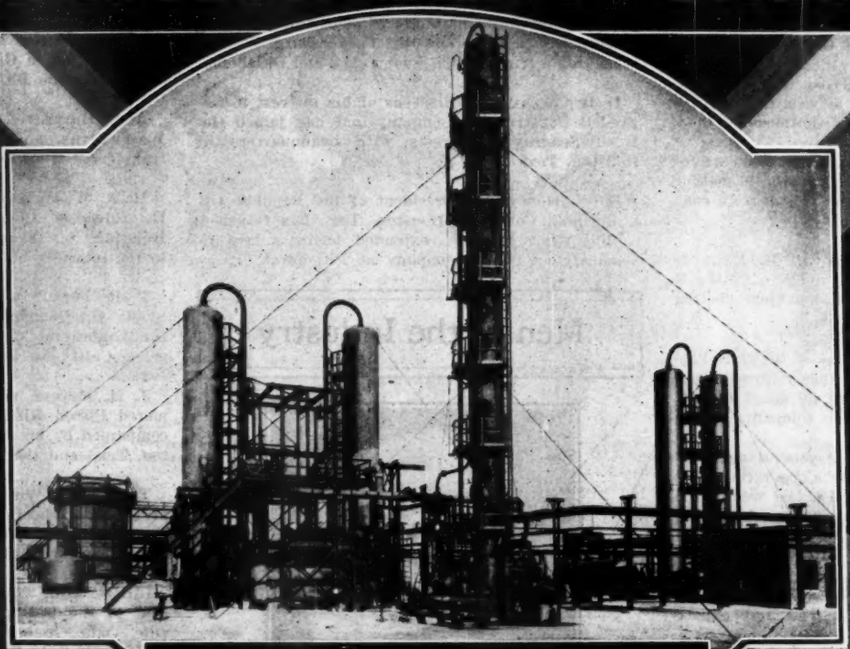
Several sections of the Stanolind gathering system, which cost about $150,000, also have been sold to the Naph-Sol company which has tied the new production into its own pipe line system. The rest of the line, which included about 24 miles of 4, 3 and 2-inch pipe, will be taken up and shipped to East Texas or other fields in which the Stanolind company is now expanding its pipe line operations.

The Naph-Sol Refining Co. is now running about 750 bbls. of crude oil daily from the field. The Old Dutch Refining Co., operators of the largest Muskegon plant, is running about 700 bbls. a day of Muskegon crude and the Independent Pipe Line Co. is running about 400 bbls. a day to the plant of the H. H. Cross Refining Co.

The Old Dutch is shipping in about 800 bbls. a day from Mount Pleasant.

JACKSON

DOUBLE DISTILLATION AND FRACTIONATING UNITS



OF TWENTY-TWO COMPLETE JACKSON RECOVERY PLANTS INSTALLED DURING THE PAST YEAR—THREE WERE OF THIS SPECIAL TYPE.

JACKSON VAPOR RECOVERY PLANTS ARE PROCESS ENGINEERED TO MEET THE EXISTING CONDITIONS OF VAPOR QUALITY AND THE DESIRED ECONOMIC EXTRACTION

NEW YORK DALLAS TULSA LOS ANGELES

Personal Paragraphs About Oil Men

George P. Whaley, of the Vacuum Oil Company, is on an extended tour of France and Holland.

* * *

E. A. Clark has been elected vice president of the Pittsburgh Group Companies, Columbia system.

* * *

Wallace A. Belstrom, vice president of Mills Bennett Production Company, Houston Tex., was a business visitor in Dallas, Tex.

* * *

F. Y. Hutchinson, chief engineer of the Houston Oil Company, Houston, Tex., spent several days in Corpus Christi, Tex., on business.

* * *

John Long, general manager of Petroleum Equipment Company, Fort Worth, Tex., spent several days in Houston and the Gulf Coast on business.

* * *

Charles L. Reed, of the Gypsy Oil Company, Casper, Wyo., has been on a scouting trip to Cody and northern Wyoming and southern Montana.

* * *

A. M. Bowman, district manager of Oklahoma for Parkersburg Rig & Reel Company, Tulsa, is making a trip to the East Texas fields to consult with company officials.

* * *

H. A. Wood, secretary of the E. H. Edwards Wire Rope Company of San Francisco, Calif., is making a tour in the Mid-Continent Field visiting its distributors.

* * *

Underwood Nazro, vice president of the Gulf Production Company, Houston, Tex., has returned from a trip to Pittsburgh, Pa., where he spent several days visiting headquarters of the company.

* * *

R. B. Bloss, vice president and general manager of the new International-Stacey Corporation, Columbus, Ohio, passed through Tulsa last week on a tour of inspection of the company's branches.

* * *

J. D. Roberson of the Dallas office of the American Cast Iron Pipe Company, Birmingham, Ala., has been transferred to the New York office as assistant to E. W. Herman, eastern and export sales manager.

* * *

O. V. Borden, with the Southwestern Construction Corporation, has returned to Tulsa after about 18 months' absence in West Virginia, Virginia and other eastern states where he has been engaged in laying pipe lines.

* * *

L. L. Watkins, contact man of the Baker Oil Tools Company, Huntington Park, Calif., was in Tulsa for a brief visit to the local office. Mr. Watkins formerly was connected with the purchasing department of the Tidal Oil Company in Tulsa.

* * *

P. N. Guthrie, Jr., president of the Reading Iron Company, has announced the election of Myron H. Clark as vice president of the company in charge of operations. Mr. Clark was assistant to the president of the Crucible Steel Company.

* * *

A. J. Hardendorf, vice president and general manager of the Fredell Construction Company, has been driving over the proposed route of the Montana Power Company's pipe line for natural gas. The new pipe line proposes to furnish gas to Butte, Helena and many other towns in Montana.

* * *

F. H. Morehead, chief engineer of Walworth Company, was elected engineering vice president of the company at a recent meeting of the directors. Mr. Morehead, a graduate of the University of Missouri, was employed for several years by the American Steel & Wire Company, and later was with the Kewanee Private Utilities Company. In 1905 he went to the Western Tube Company. This plant was subsequently acquired by Walworth Company. Mr. Morehead was made manager of Walworth Boston Works in 1921 and later became chief engineer of the company.

O. E. McClatchey, purchasing agent of the Barnsdall Oil Company, is in East Texas on business.

* * *

Lou Stevenson of Copleston, Ontario, has returned from Persia where he has been drilling for several years.

* * *

H. H. Hall has been elected vice president and a director of the Columbus Gas & Fuel Company and the Federal Gas & Fuel Company.

* * *

W. S. Farish, president of the Humble Oil & Refining Company, Houston, Tex., has just returned from a business trip to New York City.

* * *

H. D. Crawford, in charge of sales for the Parkersburg Rig & Reel Company, Parkersburg, W. Va., is making a trip through East Texas and Oklahoma.

* * *

D. B. Cogswell has disposed of his interest in the Fredell Construction Company and has joined the Moody-Seagraves interests with headquarters in Houston, Tex.

* * *

D. W. Hovey, vice president of the Republic Oil & Refining Company, Houston, Tex., has returned to his office from an extended business trip to headquarters of his company at Pittsburgh, Pa.

Men of the Industry

Louis L. Stephens

Louis L. Stephens, general counsel of the Standard Oil Company of Indiana, who has been elected to the board of directors, was born March 2, 1875, at Glenwood, Iowa. After the usual basic schooling and some private tutoring he engaged in private business until 1901, when he took up the practice of law in South Dakota. He was engaged in the general practice in South Dakota and adjacent states from 1901 to 1924 with the exception of the two years of the World War, during which years he was on duty as a captain of infantry in the United States and France.

Going to Chicago in 1924, Mr. Stephens became general attorney for the Standard Oil Company of Indiana. He was advanced to the position of general counsel in 1928. In this position he has had direction of the legal work of the company including much of the handling of the famous "cracking" patents case won by the company in 1931 before the Supreme Court of the United States.

Mr. Stephens is a member of the Union League, Lake Shore Athletic, and Army and Navy Clubs.

Brooks Gutelius, president of the Continental Supply Company, St. Louis, was in Tulsa last week.

* * *

Roy Dow, sales manager, International Supply Company, is on a business trip to the East Texas fields.

* * *

Lester B. Manley, sales manager, Texas Creosoting Company, Orange, Tex., was in Tulsa last week with C. C. Musgrove, local representative.

* * *

W. A. Schlueter of the Refinery Supply Company, Tulsa, and Mrs. Schlueter have left for Chicago by automobile on a business trip.

* * *

Raymond Cross has been elected a vice president of the Columbia Gas & Electric Corporation and a director in the Pittsburgh Group Companies.

* * *

Allen Hargrave, with the Simms Oil Company in West Texas, and eastern New Mexico, has been transferred from Roswell, N. Mex., to Midland, Tex.

* * *

H. A. Wood, secretary and sales manager for E. H. Edwards Company, Standard Oil Company Building, San Francisco, Calif., has been in Tulsa in the interests of his company.

* * *

P. R. Yewell, formerly district geologist for the Skelly Oil Company at San Angelo, Tex., has left for Alpine and Marathon, before going to Los Angeles, Calif., for an indefinite stay.

* * *

J. H. Meyers, vice president of American Hammered Piston Ring Company, Baltimore, Ohio, accompanied by his wife, spent several days in Houston, Tex., and the Gulf Coast calling on the trade.

* * *

Thomas R. Weymouth has been elected a vice president of the Columbia Gas & Electric Corporation, a director of the Charleston Group Companies and a director of the Binghamton Group Companies.

* * *

Gillette Hill, who recently resigned as vice president of the Phillips Petroleum Company, Bartlesville, Okla., to become executive vice president of the Moody-Seagraves-Morgan interests, has taken over active charge of his new duties at Houston, Tex.

* * *

Charles E. Bennett, C. I. Weaver and D. M. Wilson have been elected directors of Columbia Engineering & Management Corporation. Mr. Bennett has also been elected president of the Binghamton Group Companies, and Mr. Weaver president and a director of the Columbus Group Companies.

* * *

A. O. Olsen of Olsen Drilling Company and Lloyd Noble of Noble Drilling Company are spending considerable time in Casper, Wyo., where Olsen Drilling Company is drilling a deep test for the Mid-West Refining Company on the Midway structure, and the Noble Drilling Company is drilling a deep test for the Ohio Oil Company on the Nieber Dome.

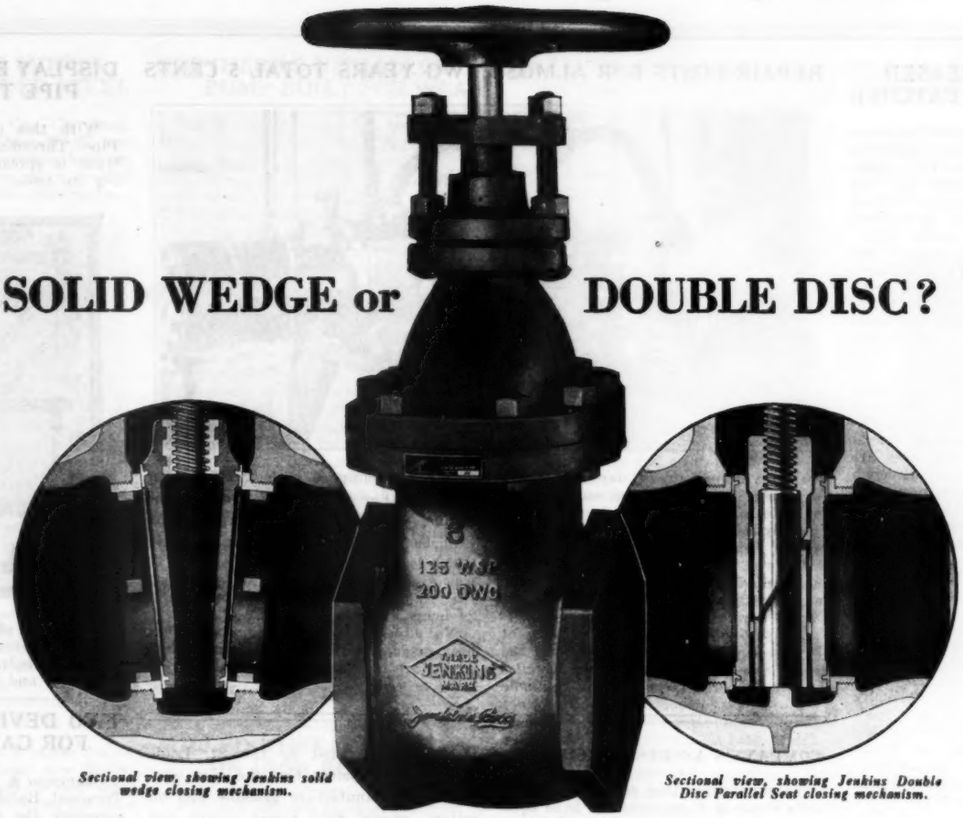
* * *

J. F. Owens has been elected president of Oklahoma Gas & Electric Company, it was announced by John J. O'Brien, president of the Standard Gas & Electric Company. Mr. Owens, who is first vice president of the National Electric Light Association, has been vice president of the Oklahoma company since 1918. The office of president was held by Mr. O'Brien.

* * *

F. E. Spencer, A. L. Lake, J. S. Vickers, H. M. Johnson and S. S. Jackman, of the Spencer Petroleum Company, motored from Chicago to Bradford, Pa., recently and were the guests of the officers and directors of the Kendall Refining Company. The trip between the two cities was made in 4 hours and 15 minutes. The Spencer Petroleum Company distributes Kendall Refining Company products in its territory.

SOLID WEDGE or DOUBLE DISC?



Sectional view, showing Jenkins solid wedge closing mechanism.

Sectional view, showing Jenkins Double Disc Parallel Seat closing mechanism.

Fig. 325, Jenkins Standard Iron Body Gate Valve. Screwed, with Solid Wedge, Inside Screw, Stationary Spindle.

Now you can obtain either in

JENKINS IRON BODY GATE VALVES

JENKINS Iron Body Gate Valves can now be obtained either with the regular Jenkins solid wedge, or with the new Jenkins Double Disc closing mechanism.

Great strength at no sacrifice of smooth, easy operation, is an outstanding characteristic of Jenkins Gates. Every feature of construction, from the high-test iron of which the body is cast to the extreme precision of machining, contributes stamina for long, leak-tight service.

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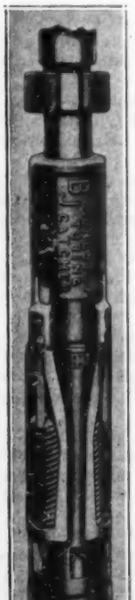
PROTECTION INCREASED BY BJ TUBING CATCHER

A tubing catcher distinctive in many points of construction is offered by Byron Jackson Co., under the name of "BJ surestop tubing catcher." It has been tested in the field.



This catcher consists of only 10 parts. There are no small bolts, nuts, or cotter pins. The entire tool is of rugged construction and easy to assemble.

The over-all length has been held to a minimum to facilitate running operations, and tests are said to have shown that even in crooked holes there is no tendency to catch or hang up while running in at top speed. Unusually large circulation passages further increase the running-in speed.

The three slips are of special heat-treated steel and their area is unusually large and the tendency of the catcher to bulge or break through the walls of the casing if the tubing parts is thus greatly reduced. The extra width of these slips, together with the angle of the teeth, insures catching and holding in a drop not to exceed 2½ inches.

A strong guide collar, located near the top of the catcher, prevents any possibility of the slips passing over the head of the catcher, commonly termed "telescoping."

Illustrated literature describing the BJ surestop tubing catcher will be forwarded upon request by Byron Jackson Co., 2150 East Slauson Avenue, Los Angeles, Calif.

ELECTRIC MOTOR MADE FOR HAZARDOUS AREAS

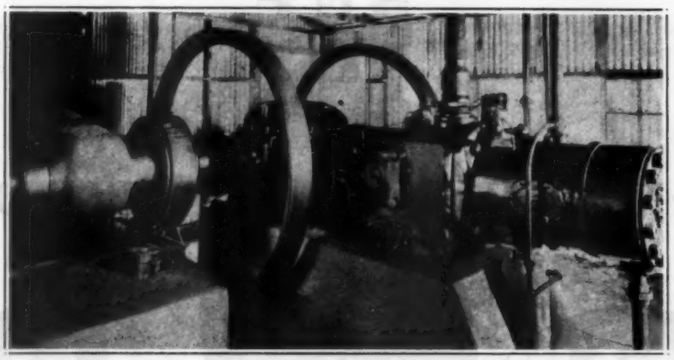
The Howell Electric Motors Co., Howell, Mich., announces the development of a new motor that bears the approval of the Underwriters' Laboratories for Class 1, Group D, covering use in gasoline vapor and air mixture or lacquer solvent and air mixture.

This motor is built in either polyphase or single-phase design with a totally enclosed frame or a totally enclosed fan-cooled frame. The polyphase motors are of squirrel-cage construction with extra heavy castings, bolts and parts. All machined parts have large fitting surfaces to correspond with the Underwriters' Laboratory requirements for this class of service. The single-phase motors are also of squirrel-cage construction. They are of the condenser start type, each motor having a condenser starting unit placed in a separate box which must be mounted outside the hazardous area.

EXPORT ASSOCIATION FORMED

Organization of the Oil Equipment Export Association was completed at a meeting in Los Angeles, Calif., attended by 40 representatives of the oil equipment industry. The following officers were chosen: W. R. Martin, president; T. Sutter, first vice president; John Grant, second vice president; L. C. Harbert, secretary-treasurer.

REPAIR COSTS FOR ALMOST TWO YEARS TOTAL 5 CENTS



Twenty-four hours a day continually for almost two years—and only 5 cents for repairs to the clutch—is the record made by a 50-horsepower gas engine used by the Home Gas Co. at a St. Louis, Okla., well. Records like this demonstrate the marked advance that has been made in the engineering of oil-field prime movers during the past few years.

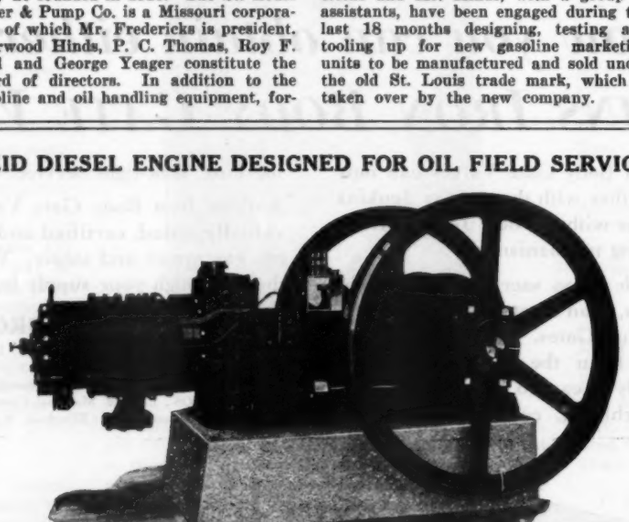
Put into operation June 5, 1929, at the company's No. 1 Wallace well, the engine was the first two-cycle installation by Cooper-Bessemer in the Seminole area to be equipped with Timken roller bearings. For the past two months the engine, shown in the accompanying picture, has been used in pumping the well, which is 4,271 feet deep. Prior to this it was used for swabbing. Until proration the swab was run as high as 64 trips in 24 hours, handling 800 bbls. of fluid.

No adjustment of bearings ever has been made and the original parts of the engine are intact, no replacements having been necessary.

COMPANY'S ASSETS PURCHASED

The entire operating assets of the St. Louis Pump & Equipment Co. have been purchased by the St. Louis Meter & Pump Co., Cole C. Frederick, pioneer pump builder, thus gaining control of the company he founded in 1919. The St. Louis Meter & Pump Co. is a Missouri corporation of which Mr. Fredericks is president. Sherwood Hinds, P. C. Thomas, Roy F. Hall and George Yeager constitute the board of directors. In addition to the gasoline and oil handling equipment, formerly manufactured by the St. Louis Pump & Equipment Co., the new company will manufacture gasoline and oil meters, special duty power pumps and liquid handling systems for industrial use as well as marketing devices. Mr. Fredericks and Mr. Hinds, with a group of assistants, have been engaged during the last 18 months designing, testing and tooling up for new gasoline marketing units to be manufactured and sold under the old St. Louis trade mark, which is taken over by the new company.

REID DIESEL ENGINE DESIGNED FOR OIL FIELD SERVICE



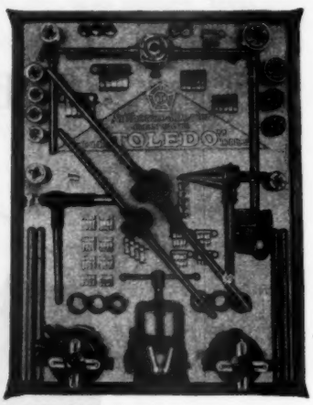
The first full Diesel engine of the single-cylinder, horizontal type especially designed for oil field service has been built and installed by the Joseph Reid Gas Engine Co., Oil City, Pa., the Type DC Diesel convertible engine rated 40 horsepower at 275 r.p.m. It is a solid injection two-stroke cycle Diesel which may be converted to a gas engine.

A fuel pump and injector nozzle provide a dependable fuel system which functions efficiently and economically on fuel or furnace oil of the average gravities. The fuel pump operates from a cam on the engine layshaft. The engine is easily and quickly converted from one fuel to the other. Two men working in the field can effect the change in one hour, according to the manufacturer.

Exhaustive tests at the factory and in the field are reported to have proved these Reid Type DC Diesel convertible engines to be practical and economical. The fuel consumption rate is about .4 pounds per brake horsepower, and the gas engine uses 11½ cubic feet of gas per brake horsepower. Reid Bulletin No. 55 gives power curves and detailed specifications.

DISPLAY BOARD SHOWS PIPE THREADING TOOLS

With this display board the Toledo Pipe Threading Machine Co., Toledo, Ohio, is spreading information concerning its tools. The board, presenting a



standard set of devices recommended by the manufacturer, is being installed in oil field supply, hardware and mill supply stores and in jobbing establishments.

TWO DEVICES DESIGNED FOR GAUGE PROTECTION

Champion & Barber, Inc., 576 Subway Terminal Building, Los Angeles, Calif., announce the manufacture of two new gauge protection products, the Champion gauge protector and the Champion nonpulsator.

The Champion gauge protector is a simple, three-part, bronze-bodied, rubber-bulbed instrument, used to transmit line pressures to gauge recordings by means of a secondary, or bulb pressure; the recordings being the result of the compression of the secondary bulb liquid by a given line liquid. It has an anticorrosive body, an acid resistant pressure bulb; restricts the passage of line solids into the gauge or tube movement, and makes an all-purpose gauge out of any ordinary gauge.

The Champion nonpulsator operates by fluid passage restriction, and the control of the restriction by means of a needle valve. The pulsation recordings on the gauge are controlled entirely by the adjustment of the needle valve, regardless of the pulsations of the line pressures. More complete information may be obtained by writing Champion & Barber, Inc., and asking for "Gauge Protection via the Champion Method."

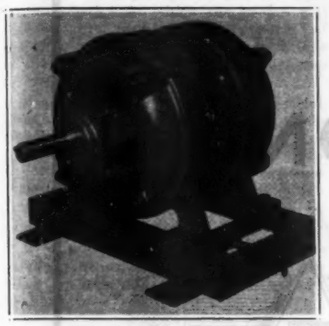
NINTH ELECTRIC TANKER

The ninth electric tanker and the thirteenth Diesel-electric vessel to be built for the Atlantic Refining Co. is now under construction by the Sun Shipbuilding Co., Chester, Pa. This vessel, to be completed late this coming summer, has the distinction also of being all-electrically welded in its hull construction. Nine tankers and four tugs make up the total of 13 Diesel-electric vessels owned by this company. Of this number, the electric equipment was supplied for eight (including the new one) by the General Electric Co., and for three more by the British Thompson-Houston Co., an affiliated company in Great Britain. The power plant of the new tanker will consist of three Cooper-Bessemer Diesel engines each having a 105-kilowatt, direct-current generator, two with direct-connected auxiliary generators of 25 kilowatts capacity each.

Oil Industry Equipment and Supplies

MAKE ONE-PIECE MOTOR BASE OF WELDED STEEL

The Lincoln Electric Co., Cleveland, Ohio, manufacturer of "Linc-Weld" motors and "Stable-Arc" welders has announced the manufacture of a welded steel motor base of one-piece construction.



These new bases designed to be used instead of slide rails, are constructed of rolled steel angles and flat bar stock fused into one homogeneous unit by the electric arc. The flanges of the angles to which the motor is bolted are slotted to permit moving the motor on the base for purpose of tightening the drive belt. At one end a screw adjustment is provided for moving the motor on its base in such cases.

The photograph shows a motor bolted in place on one of these new bases. Drilled angles are welded to the sides form hold-down lugs for securing the base in position. The arc welded steel construction as employed in this base makes possible a strong, stiff base with less weight.

REID ENGINE OPERATES ON EITHER OIL OR GAS

The Reid type DC Diesel convertible engine made by the Joseph Reid Gas Engine Co., Oil City, Pa., is rated 40 horsepower at 275 r.p.m. The design follows closely that of the Reid type C gas engine. A Bosch fuel pump and injector nozzle provide a fuel system which is said to function efficiently and economically on fuel or furnace oil of the average gravities.

The change from one fuel to the other may be made with small outlay of time and labor. Two combustion heads are used, one for the Diesel and one for gas. Exchange the combustion heads, substitute a Wico igniter for the fuel pump, and a spark plug for the injector nozzle, connect the gas valve, and the Diesel is ready to run on gas. This change is simple and easy to effect and the manufacturers say it can be done in the average power house by two men in approximately one hour.

The unit is a solid-injection two-stroke cycle type Diesel. There are no mechanically operated valves as the air is admitted and the burnt gas exhausted through ports in the cylinder walls. The fuel pump is operated by a cam on the engine layshaft. It is the simplest of prime movers operating with a minimum of attention, according to the manufacturer, if proper fuel, lubrication and water cooling are provided.

W. H. Benduhn, San Francisco, Calif., has been appointed representative of the Young Radiator Co. for the Pacific Coast district in the sale of its products such as engine coolers for gasoline, oil and Diesel engines, air compressors, drag lines, trucks, airplanes, oil coolers and for various work where liquid cooling is required.

NORTHERN'S NITRALLOY PUMP BUILT FOR WEAR

The Northern Pump Co., Minneapolis, Minn., manufacturer of high-pressure, rotary pumps, is manufacturing an all-steel pump in which all of the working parts coming in contact with the liquid are made of Nitralloy steel.

The pump is so constructed that centrifugal force throws all solids away from the inner meshing points of the pumping elements. All shafts thrust occasioned from driving on the coupling or from misalignment or from any outside source is taken care of by a Nitralloy collar running against hardened surfaces, and this prevents wear on the faces of the pump gears. An outboard bearing is provided so that the pump may be driven by a gear or a belt if desired.

The driven pump gear is provided with unusually large bearings on both sides of the gear, preventing this gear from tilting. A massive solid steel block provides the foundation.

Nitralloy, a new alloy steel, invented by Dr. Adolf Fry of the Krupp Research Laboratories, Essen, Germany, has a measured hardness of 900 to 1,100 Brinnel and is highly resistant to the action of acids commonly found in fuel oil and other oils, and to dirt and other foreign materials. The new pump is said to be suitable not only for fuel oils, but for handling lubricating oil, gasoline and other similar oils.

MILLED THREADS USED ON IRON BODY VALVES

Precisely uniform threads, produced by the milling process, are now used in all sizes of iron body valves made by the Ohio Injector Co., Wadsworth, Ohio. The threads are accurately milled with a lead controlled by a lead screw. According to the manufacturer this provides an accurately fitting union with the pipe and a permanently tight joint. These threads are said to afford a clean start without cross-threading. The milled pipe thread holds the standard taper per foot used on pipe threads.

HAZARDS DECREASED BY AUTOMATIC TANK GAUGE

The Vapor Recovery Systems Co. of Compton, Calif., announces a new automatic gauge for butane tanks. Frank V. Long, president, says gauging of liquid gas, because of the high pressures which must be maintained within the vessels, has presented many problems and hazards which the new Varec liquid gas gauge is designed to eliminate. Contents in the tank are given in feet and inches at the ground or may be at some remote location.

All fittings are tested at twice the working pressure, the gauge tape being visible through a plate glass window. Each moving part is noncorrosive and is easily accessible. These gauges have been used on tanks maintaining 50 pounds gauge pressure and two recently were installed where 250 pounds gauge was the working pressure. In cases of 250 pounds pressure gate valves may be installed over the lookbox glass as an additional safety factor without interfering with the view of the tape. The method of construction lends itself to varying requirements and may be had for any working pressure.

ALUMINUM-ALLOY CHAIN HOIST OFFERED BY C-M

The Chisholm-Moore Hoist Corp., Tonawanda, N. Y., announces an aluminum-alloy chain hoist, Al-Lite, which is extremely light and has few parts with unusual strength and efficiency. Only certified Alcoa aluminum alloys are used. All C-M distributors will be ready to show the new hoist on April 15.

Features of the hoist include lightness, strength, portability, alemite lubrication, simple, rugged design, easy accessibility, hardened and ground ball bearings, planetary type gears, dustproof housing, adjustable brake secure and positive in action, bright aluminum finish, corrosion resistant, "Inswel" chain and 50 per cent overload test.

One man can carry it and hang it in place, according to the manufacturers.

NEILAN CONTROLLER CAN BE USED IN MANY WAYS

The Neilan Co., Ltd., manufacturer of automatic control and regulating equipment, is marketing a recently perfected differential or pressure limit controller for use in a large number of services

such as cutting in and out additional measuring meters whenever distribution loads build up periodically and later fall back to normal. This controller also closes a valve in long transmission lines in the event of a line break which would otherwise be both dangerous and costly. It automatically starts and stops booster pumps as the line pressures vary under different load conditions.

The controller is entirely self-contained, simple in design and rugged in construction. It will control steam or electrically operated compressor units and perform other oil and gas, industrial and public utility services. A full description may be obtained in a new booklet being distributed by Neilan Co., Ltd., 641-651 Santa Fe Avenue, Los Angeles, Calif.

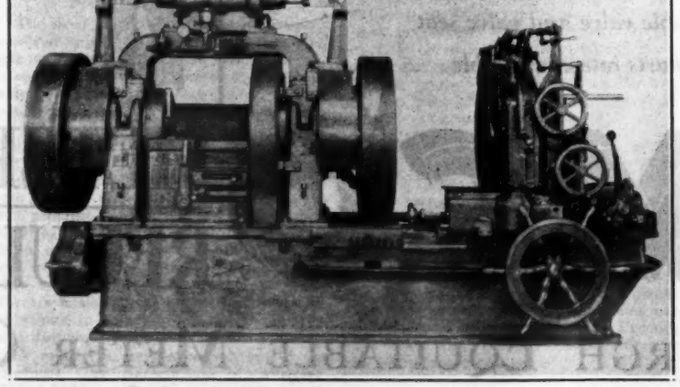
THERMOMETER OFFERED WITH SNAP CASE-FRONT

The C. J. Tagliabue Manufacturing Co., Brooklyn, N. Y., has put into production a new industrial thermometer with improvements that include a snap case-front. The glass fronts on industrial thermometers get dirty and under certain conditions "fog up." The new Tag snap case-front has been designed to make cleaning easy and to make breakage of the easily removable glass front almost impossible. A tongue at the top of the case fits snugly in a groove in the front so that in either opening or closing the front it cannot slip and fall. It takes little effort to remove, clean and replace the new front which, when in position on the instrument, is held firmly closed by the snap device.

Other features enumerated by the manufacturer follow: Tag-Hespe glass, easy to read; connecting piece, locked to case by a specially designed split spring washer; asbestos packing, uniformly compressed around enlargement on glass stem prevents movement of the tube with reference to scale; the monel bulb chamber is thin enough to allow quick conductivity, yet rugged and noncorrosive, cannot amalgamate with the mercury filling; left-handed thread on bulb chamber prevents loosening if case is turned in removing thermometer from socket; mercury filling in bulb chamber completely surrounding bulb of thermometer insures transmission of heat with split-second rapidity.

"Four Air Compressors Went to School" is the title of a booklet published by the Davey Compressor Co., Kent, Ohio, and describing how and why the Davey air-cooled compressor won honors in a 500-hour non-stop test.

AIR-OPERATED CHUCKS INSURE POWERFUL GRIP ON PIPE

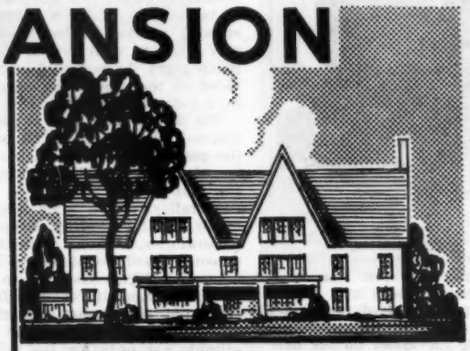


The Landis Machine Co., Waynesboro, Pa., is offering an 8⅝-inch pipe-threading and cutting machine equipped with air-operated chucks.

This attachment insures a powerful grip with practically no effort on the part of the operator and eliminates the possibility of the grips losing their hold on the pipe during the threading operation.

The attachment is controlled by a four-way valve which automatically returns to the neutral position when the operator removes his hand from the control lever. The air consumption is exceedingly low.

EMCO REGULATORS FOR BUNGALOW OR MANSION



THE ONLY COMPLETE LINE OF METERS AND REGULATORS

A regulator designed especially for domestic services that will operate under high or low pressure with natural or artificial gas.

The delivery pressure can be changed instantly while in service without shutting off the gas—all parts are interchangeable and accessible—repairs can be made without removing the regulator from the line. They can be furnished with spring or weight adjustment with or without mercury seals.

EMCO PRINCIPLES

Repairs can be made in the line

Removable valve and valve seat

All parts interchangeable

EMCO METERS AND REGULATORS

PITTSBURGH EQUITABLE METER COMPANY

Main Office and Works—Pittsburgh, Pa.

New York City, Chicago, Ill., Los Angeles, Calif., Tulsa, Okla., Dallas, Texas, Davenport, Iowa, Columbia, S. C., Salt Lake City, Kansas City, Mo., Seattle, Wash., Houston, Texas

Natural Gas Industry Developments

FORT WORTH AWARDS CONTRACT TO SHAMROCK

FORT WORTH, Tex., May 16.—The city council of Fort Worth has approved the contract of the Shamrock Natural Gas Co. of Amarillo to supply a municipally owned gas system and arranged for an election at which the people will vote on the proposition. Approval of the offer ended two years of negotiations of the council with out-of-town concerns to supply a municipal system.

The council also proposed an amendment to the city charter, empowering the city to acquire the two distributing systems owned by the Lone Star Gas Corp. and the Latex Gas Co., either by purchase or by condemnation.

The proposed charter amendment includes six provisions:

It empowers the city to acquire the privately owned gas distributing systems, either by purchase or condemnation proceedings.

It permits the city to enter into a contract with a substantial concern to supply the municipal system.

It provides that the proposition will be financed by the issuance of revenue bonds, and not by taxation, and that the contract can not exceed 30 years in its effectiveness.

It authorizes the city to issue temporary notes, needed to take over the gas properties. The notes later would be exchanged for revenue bonds.

It allows the city council to create a department or commission for operating the gas system.

The contract provides for construction of a line, at least 18 inches, from the Amarillo Field to Fort Worth to be completed within 200 days after the city obtains legal and physical possession of the distributing systems. The cost of the line is estimate at $7,000,000 to $8,000,000. Gate rates for the first 15 years are as follows:

Gas delivered for domestic consumption, 30 cents per 1,000 feet for the first five years; 31 cents for the second five years and 32 cents for the third five years; for industrial consumption, and gas lost in distributing, 16 cents for the first five years, 17 cents for the second five years and 18 cents for the third five years.

At the end of 15 years the gate rates are to be increased to the extent that the prevailing price of gas at the well is more or less than 5 cents pere 1,000 feet. The contract also provides that the corporation can contract at lower rates with industries and that under such rates the city will be paid a profit of 1 cent per 1,000 feet.

The corporation agrees to deliver yearly up to 20,000,000 feet of marketable gas free from extraneous dilution with 1,000 B.t.u. content at a pressure of 35 to 40 pounds per square inch. The company was one of 12 bidders.

If the contract is ratified by the people, the city then would start proceedings for taking over the distributing systems. Should negotiations for purchasing them fail, the matter would be thrown into the courts and before the Texas Railroad Commission, O. E. Carr, city manager, pointed out.

Mayor Bryce signed the contract but did so with the explanation that he is opposed to the contract and to the plan for municipal ownership of gas properties.

At the same time, four councilmen, A. E. Thomas, J. B. Davis, E. T. Renfro and J. B. Penn, issued a signed statement which termed municipal ownership and operation of gas properties an "experiment" and urged defeat of the proposition at the polls.

GAS WELL DELIVERY CAPACITIES COMMITTEE REPORTS ITS PROGRESS

The report of the committee on gas well delivery capacities before the convention of Natural Gas Department, American Gas Association, at Memphis, Tenn., follows:

It has long been recognized that a gas well, unless very unusual in character, will deliver gas at a rate which is regulated by the type and condition of the sand, the volume of pore space in the sand, and the pressure in the sand. For ordinary wells there is a workable manipulation between formation pressure, back pressure and rate of delivery. The real basis of this manipulation is flow of natural gas through sand from a slowly decreasing upstream pressure into a controllable downstream pressure, the rate of flow being dependent upon the relation between the two pressures. Development for several years has been toward the use of pressure relations to determine not only "open-flow" capacities of gas wells but the ability of the wells to deliver gas under any pressure conditions instead of depending upon volumetric measurements at the well head under the exact pressure conditions required.

State conservation departments have adopted rules which specify the rates of delivery that should be observed in operating gas wells. These rules are based upon the capacity of each well to deliver gas under "open-flow" conditions. The rules also specify that "open-flow" capacity should be determined at definite intervals. Blowing a well wide open to the atmosphere for purposes of testing its capacity has never been desirable, and it is the consensus of opinion, including the engineers on the conservation commissions, that such tests are not necessarily a representative basis for all wells to determine their most efficient producing conditions.

The pitot tube usually is the basis of measurement for "open-flow" tests. The impact pressure of the gas being discharged from the producing string of pipe is observed and the volume corresponding to this impact pressure is obtained from a set of tables which gives the rates of flow through different sizes of producing strings corresponding to different impact pressures. The pitot tube is not sufficiently accurate for measuring very low rates of flow such as are found in many casinghead gas wells. In such cases, the orifice well tester is the basis.

Better Methods Needed

The need of better methods of gauging gas-well capacities to eliminate excessive gas waste and damage to gas wells has been an incentive to development. Considerable study has been made of the problem. Each development adds more to the general knowledge of the problem and results in a better foundation for future study. Although the problem of gauging the ability of gas wells to deliver gas against different back pressures has not remained entirely in the background, most of the emphasis and the thought has been concentrated on the capacities of gas wells under conditions of "open flow." The most important developments which form a basis for the use of back-pressure relations in gauging gas-well capacities are discussed below.

A report before the convention of the Natural Gas Association of America, May, 1925, explained a method which had been devised to gauge "open-flow" capacities of gas wells from pressure observations.[1] The results of this work indicated that there was a relation between rates of delivery and back pressures for a particular gas well. The method of computing results, however, is complicated and the plotting of several charts for each well is a laborious task. Studies were continued to originate a more simple basic method of applying this same type of data to all gas wells.

A plan for determining open-flow capacity which is based upon data from the history of wells in a field was proposed by Parsons.[2] The plan consists of determining the relation, from available data of the field, between the decline in rock pressure and the decline in "open flow." This relation is really a composite curve for all of the wells in the field. With this curve as a basis, the decline in "open flow" is computed by simply measuring the decline in rock pressure. It was recognized that the principal difficulty in using this plan is to establish pressure-volume decline curves in the early stage of production for a group of wells. Each well has individual characteristics, and it is difficult to correlate the data from several wells in one field to give the decline relations for the field except under most favorable conditions. However, in the particular case mentioned by Parsons, data for a period of five years on 20 normal wells that had declines of from 60 to 65 per cent in shut-in pressures were available, and it is believed that the average curve is representative of the field in which the wells are located.

The 90 Per Cent System

In December, 1928, the Indian Territory Illuminating Oil Co. of Bartlesville, Okla., owning and operating nearly 200 gas wells in Osage County, Oklahoma, adopted, with the approval of the Osage Agency of the United States Indian Department, the "90 per cent pressure gauge system" for gauging the capacities of the wells to deliver gas. The rate of delivery at 90 per cent of the shut-in or formation pressure is measured and used as a basis for proration and other purposes. The advocation of this method of gauging gas well capacities is an important forward improvement. The use of this plan eliminates the necessity of opening the wells wide for "open-flow" tests. Only 10 per cent of the back pressure need be removed for this purpose of gauging tests, and gas is measured at the normal flow condition in the sand. The plan, however, is not a basis for determining the well capacity to deliver gas against different back pressures. Also, the value, 90 per cent, is based on the fact that for these particular wells, the rate of flow against a back pressure 90 per cent of the formation pressure is approximately from

(Continued on Page 134)

[1]Bennett, E. O., and Pierce, H. R., New Methods for Control and Operation of Gas Wells, presented before Natural Gas Association, May 20, 1925. Diehl, J. C., Natural Gas Handbook, Metric Metal Works, Erie, Pa., 1927, p. 265.

[2]Parsons, C. P., Eliminate Blowing of Gas Wells, The Oil and Gas Journal, December 6, 1928.

CARBON BLACK PROJECT

CHATHAM, Ontario, May 16.—L. Jerome Floum of the New York firm of K. D. Johnson & Co. is in Alberta investigating establishing a plant for manufacturing of carbon black from waste gas in Alberta. He conferred with Premier Brownlee and William Calder, director of petroleum resources.

NEW SYSTEM PLANNED

CHATHAM, Ontario, May 16.—Following the approval of a franchise granting the Southern Ontario Gas Co. the right to supply natural gas to Sarnia Township, the company is planning early construction of a transmission and distributing system.

AMARILLO GAS COMPANY FIGHTS CONDEMNATION

AMARILLO, Tex., May 18.—The Amarillo Gas Co. will take steps to resist the condemnation of its properties by the city of Amarillo, its manager, H. M. Brown, said following action by the city commission authorizing steps to force the gas company to surrender its properties to the city for municipal ownership and operation of the plant.

For some time there has been agitation looking toward municipal operation of the gas company. Recently the company granted a rate reduction. Mayor Ernest Thompson said: "We seriously considered putting in our own system until we decided that the condemnation of the present company's properties, would be the best for the taxpayers."

Officials said court petitions, looking to the condemnation of the plant, would be prepared immediately.

Instead of awarding contracts for the building of a new plant, the city commission rejected all bids and instructed the city council to prepare condemnation petitions. The bids on installation of a new system ranged from $1,161,531 to $1,353,323.

LYCOMING GAS BUYS EAST PENN HOLDINGS

WELLSBORO, Pa., May 18.—Under an agreement recorded last week, the East Penn Developing Co. sold to the Lycoming Natural Gas Co. its holdings in the Tioga gas field. The East Penn, holding company for the North Penn Gas Co., Allegany Gas Co. and Crystal City Gas Co., sold leases for 10,000 acres, four drilling wells, and the producing wells Nos. 1 and 2 Palmer. No. 1 Palmer is the Tioga Field discovery well. The cash consideration was not made public.

With this latest acquisition the Lycoming Natural Gas Co., a subsidiary of the Standard Oil Co. of New Jersey, is now the largest in the Tioga Field. This company last month took over the Benedum-Trees, South Penn, Benedum & Trees holdings comprising 11 drilling wells, 4 producers and 250,000 acres under lease. The Lycoming now owns 3 producing wells, 16 drilling wells, and about 1,000,000 acres of leases in New York and Pennsylvania.

Rights of way for a 100-mile pipe line to Syracuse have been purchased and staked out by the Lycoming.

GAS FOR CLAY PLANTS

Southern Natural Gas Corp., a subsidiary of Tri-Utilities Corp., reports a steady increase in the number of industrial plants in the Southeast which are adopting natural gas as fuel. The corporation announces that new contracts just signed include one with the Edgar Brothers Co. of McIntyre, Ga., maker of clay products, for its fuel requirements, estimated at approximating 450,000,000 feet a year. The contract resulted from the application of natural gas in the plants of the Georgia Kaolin Co.

A contract has also been signed with the Oconee Clay Products Co. at Milledgeville, Ga., which will consume approximately 180,000,000 feet of natural gas a year under normal operations. Equipment is now being installed, and it is expected that the company will begin taking gas early in June.

GAS FOR UPTON, WYO.

CASPER, Wyo., May 16.—A syndicate of Osage operators has applied for a natural gas franchise in the town of Upton in eastern Wyoming. The same parties have applied for franchise at Newcastle.

ANOTHER PROMINENT DRILLING CONTRACTOR SAYS:

"MISSION SLIPS DO NOT MASH, BITE OR MAR THE PIPE . . . ."

BEARD & HAMMOND, INC.
OIL OPERATORS AND DRILLING CONTRACTORS
Philcade Building
TULSA, OKLAHOMA
March 5th, 1931

Mission Sales Company,
2416 Railroad Street,
Houston, Texas.

Gentlemen:-

During the Petroleum Exposition of 1930, we had occasion to examine your rotary pipe slips and pump valves. Shortly after, we purchased a set of each to be used on one of our drilling rigs in the Oklahoma City field.

After submitting both the valves and slips to the most severe tests, we find that the valves seat better and last longer than any other type on the market. The durability, long life and the recent reduction in the price of the valves have decreased our expense on pump parts, per well, a very substantial amount.

We find that the slips do not mash, bite or mar the pipe, and that we are relieved from that source of trouble which has proven quite an expense in the past.

We have issued instructions to our drilling superintendents to replace, as needed, all pipe slips and pump valves with Mission Sales equipment.

Very truly yours,
BEARD AND HAMMOND, INCORPORATED.
J. G. Hammond
President.

J.G.Hammond:kh

Republic Supply Company

OIL AND GAS WELL SUPPLIES
Cable and Rotary Tools

GENERAL OFFICES: HOUSTON, TEXAS

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

CHANGES IN VELOCITY

In trying to get it clear in my mind how natural gas in the sand moves oil toward the well I do not understand fully the action that takes place regarding the oil that is at a long distance from the well. Obviously it becomes increasingly hard for the gas to force oil ahead of it or along with it in the sand after the area right around the well hole has been drained. Could it not be possible for the force of the gas at a distance from the well to be so great that instead of propelling the oil it would shoot past it and leave the oil behind? If it could do that it would look as though the difficulties of recovering this oil remaining in the sand would be greatly increased.—R. T. T.

Your question reaches into a problem of production and especially of well spacing that has engaged the study of petroleum engineers. It is quite true that propelling oil through oil sands of varying porosities is much like forcing it through a pipe line full of bends and other obstructions, and the danger of bypassing, as it is called, grows with the increasing distance from the well. The subjoined discussion of your question is provided by S. F. Shaw.

"After the oil close to the well has been removed, the oil at a greater distance must be propelled to the well through a distance that becomes increasingly greater and this must be done at an increasing expenditure of energy. The velocity of flow increases as the moving mixture of oil and gas approaches the well; conversely, the velocity gradually becomes reduced as the distance from the well increases. The problem of moving oil into the well is affected not so much by excessive velocities close to the well as by a velocity at a distance from the well that is too low to move the oil through the winding channels of the sand. The movement is so slow that the gas tends to escape from the oil without moving the oil toward the well. The low velocity at a distance from the well, coupled with the increasing distance that the oil must be moved through the sand, gradually reduces the quantity of oil that eventually will reach the well.

"Another basis on which the propulsion of oil through the sand might be considered is that of the energy released by the gas during the flow to the well. A perfect gas in expanding isothermally to atmospheric pressure (14.7 pounds per square inch absolute at sea level) develops a definite number of foot-pounds of work, as noted in the following table:

Gauge pressure lbs. per sq. in.	Foot pounds work developed	Gauge pressure, lbs. per sq. in.	Foot pounds work developed
1,000	8,964	500	7,527
900	8,744	400	7,069
800	8,499	300	6,486
700	8,222	200	5,676
600	7,902	100	4,349

"In flowing through the sand, the gas expands from the rock pressure to the pressure existing at the bottom of the well, and the maximum amount of energy available for propulsion of oil is the difference in foot-pounds existing at these respective pressures. Thus, if the rock pressure is 1,000 pounds, and a back-pressure is held such that the pressure at the bottom of the well is 600 pounds, the maximum energy that can be developed is the difference between 8,964 and 7,902 foot-pounds, or 1,062 foot-pounds. If the pressure at the bottom of the well is reduced to 200 pounds the energy available for propulsion of the oil is 3,288 foot-pounds. The reduction of pressure at the bottom of the well from 600 to 200 pounds, therefore, would increase to three times the energy available for moving oil through the sand.

"Some of the gases associated with the oil are liquids when the pressure is high and are not available as a source of energy until the pressure is reduced enough so that they can assume the gaseous state. When in a liquid state these gases require the use of other fixed gases to propel them through the sand."

HOW STRAIGHT IS THE HOLE?

We are drilling a test hole approximately 1¾ inches in diameter with a core drill bringing up a seven-eighths inch core. We are down about 1,100 feet and wish to determine how near the hole is to being straight. We understand there is a way to do this with certain acids which will leave a ring on the container showing the degree of slant when taken out. Will you kindly give us what information you can regarding this, so that we may be able to check up the slant of this hole?—F. E. T.

It is possible to get a record of the deflection of a bored hole by the use of hydrochloric acid in a glass bottle. In surveying wells drilled for oil or gas it is customary to use soft glass bottles of a capacity of about 4 ounces each, and fill them about one-half full of a 20 to 25 per cent mixture of hydrochloric acid and water. This 1-to-4 or 1-to-5 mixture will etch a sharp line in this soft glass bottle in 15 to 20 minutes.

It is usual for the operator to vary the strength of his solution to meet the time requirements because the acid is working on the glass all the time it is in the bottle and if the bottle cannot be lowered to the place where the test is to be made and withdrawn again within the 15 to 20-minute period a weaker solution must be used.

The bottle usually is encased in a steel tube that will permit lowering into the well by a light line and such an outfit will be necessary to survey your small drill hole.

STORING BY-PRODUCT GAS

How natural gas not needed for immediate use can be stored in old abandoned gas sands has been explained in your magazine. Why could not the same plan be adopted by manufacturing industries, especially in the coke industry, that have gas as a by-product? A lot of this gas is wasted now because of insufficient continuous demand, but if there were some way of storing this gas it could be used profitably in the periods of peak demand. Of course, there isn't always an abandoned gas well handy, but I am sure there are in some cases.—R. D. T.

There is no apparent reason why gas obtained as a by-product cannot be stored in depleted or partly depleted gas sands just as well as natural gas, provided of course that the worked-out gas field required is available. As a matter of fact the Carnegie Steel Co., which has big mills in the Pittsburgh, Pa., district, is storing artificial gas in just this way.

WHY WAS IT CALLED THAT?

SKIMMING

In the refining branch of the oil industry a plant which removes only the lighter fractions, including kerosene and sometimes part of the gas oil, is known as a skimming plant. It is supposed this term came into use in the early days of refining because it was assumed that these lighter fractions rose to the surface of the oil in the still much as cream rises to the top of the milk. As removal of the cream from milk is called skimming, it was easy to adopt the same word to describe the removal of the lighter fractions from oil.

The Clairton By-Product Gas Co., subsidiary of the steel company, has achieved success in storing in abandoned gas wells in the vicinity of McKeesport, near Pittsburgh, millions of cubic feet of by-product gas obtained in the manufacture of coke.

The gas obtained at the Clairton coke ovens is piped through a 48-inch main to its mills in Homestead, Braddock and elsewhere and used as fuel. The mills are shut down over the week-end, except in cases where processes are necessarily continuous, and there is no need for the by-product gas fuel.

Until the company conceived the idea of using abandoned wells, the gas produced over the week-end went to waste, resulting in a tremendous loss in potential fuel. At the same time, the cost of constructing storage tanks would have entailed an expenditure to overbalance the saving in fuel.

The company took over about 100 gas wells in the field developed in the McKeesport gas boom in 1919. The excess by-product gas is piped from the coke plant into the abandoned wells, and held without leakage in these natural reservoirs until it is needed, when it is pumped out and distributed to the steel mills.

This is believed to be the first time that artifical gas has been stored successfully in the rock channels of the earth. At a time when all lines of industries are seeking ways to cut operating costs, the abandoned well storage system represents an innovation in economy. The gas is stored with virtually no loss, officials believe.

PATCHING THE PIPE LINE

How do pipe line repair men put a patch on a leaky spot or weak spot on a piece of pipe in an oil pipe line? Wouldn't it be simpler and give just as good results if a piece of bad pipe was cut right out of a line and then a new piece welded in its place?—N. R. E.

The common method of mending a spot on a pipe line weakened by corrosion is to fit a patch over the corroded area and weld it to the pipe. The patch is made from the same size pipe over which it is to fit. It is formed to fit the outside diameter of the pipe, and, in case of a leak in the line, the patch is fitted over the pit in the pipe, with a gasket between, and drawn tight by saddle or U-bolts. Then the patch is welded to the pipe. The size of the patch depends upon the size and length of the corroded area.

If necessary the whole joint or several joints of pipe might be encased by splitting a joint of pipe and welding up the splits and circumferential joints. This method of repairing such areas has proved economical and advantageous over the method of cutting out the pipe. The patching material is usually salvaged from junk pipe.

Formerly, it was the usual practice of pipe line companies to cut badly corroded pipe out of a pipe line and replace it with new pipe. This practice often occasioned loss of oil standing in the line which drained out when an opening was made causing needlessly heavy expense for this class of repair work.

ALUMINUM FOR CORROSION

In what form is aluminum used in the effort to check corrosion in tanks for storing oil? I know an aluminum paint has been used by some companies, but I believe there are other methods of using aluminum. Have the aluminum painted tanks proved a success?—D. M. S.

Experiments are being conducted in West Texas oil fields in the use of tanks built entirely or partly of aluminum of capacities up to 1,000 bbls., to ascertain the efficacy of such tanks in overcoming corrosion caused by the vapors from the oil produced in that region. The results which have been observed from the use of these tanks are said to be satisfactory.

Aluminum paint has been used extensively for painting steel oil tanks to reduce evaporation losses that occur in the storage of petroleum. A recent development has been the use of aluminum foil to coat the roofs of the tanks. The tests indicate that a great amount of heat is reflected from the tank, resulting in a much lower temperature in the vapor space and at the surface of the petroleum, thereby reducing the evaporation through breathing losses.

It is believed that insufficient care has been exercised in preparing tank surfaces to be painted, and consequently the results obtained from painting tanks have not been as satisfactory as expected. Recently some of the companies have adopted the practice of sand blasting the tank surface before painting. By using this method of cleaning the tank surfaces, a better paint job is possible.

It is believed also that the cleaning of the tanks by the sand blast will prove more economical. Of course there is some hazard from sparks in the use of the sand blast, but in the case of a tank with a riveted and caulked shell and welded roof with angle iron welded to the shell of the tank, the hazard is regarded as rather remote.

Snapped by The Journal's Cameras in North Texas

1—Hoke Martin, C. F. Green, Fred Tilson and E. M. Rollins, Mathieson Alkali Works, Inc. 2—J. E. S. Lee, superintendent, Texas Pacific Coal & Oil Company. 3—Victor Creighton, and J. L. Watson, superintendent, Texas Pacific Coal & Oil Company. 4—T. M. McHarg and W. A. Cresswell, Texas Pacific Coal & Oil Company, Thurber, Tex. 5—O. E. Mitchell, vice president, Texas Pacific Coal & Oil Company, Thurber, Tex. 6—C. L. Hightower, safety director, Texas Pacific Coal & Oil Company, Thurber, Tex.; Don Wallace, Mid-Continent Oil and Gas Association, Tulsa; and H. N. Blakeslee, American Petroleum Institute, Dallas, Tex.

WHERE CORROSION IS A PROBLEM

* * *

Wrought-iron is effective against corrosion and in actual service has proved its economy in reducing the heavy toll of "hot spots". Byers Genuine Wrought-Iron Pipe is the standard of wrought-iron quality, and experience indicates the places where its use will create balanced pipe lines which adequately meet varying soil conditions. Where corrosion is a problem, there's a place for Byers

BYERS •GENUINE• WROUGHT-IRON PIPE

BYERS •GENUINE• WROUGHT-IRON PIPE

Genuine Wrought-Iron Pipe in any "pipe prescription". New things are being learned all the time about corrosion, and constant and widespread study of it equips our engineers to give you expert and up-to-date counsel. A. M. Byers Company, Pittsburgh, Pa. Established 1864.

AN INVESTMENT — NOT AN OUTLAY

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

VAPOR LOCK AND A NATURAL GASOLINE

We have tested two of the wells of the Tampico, Mexico, district for possible naphtha production. They are carbon dioxide wells under 1,000 pounds pressure, the escaping gases from which contain naphtha of the following distillation range (as shown in the discussion). The product is water white and treats easily. The distillation range shows it to be rather different from that of certain commercial gasoline, especially in the lower ranges. Are there any features indicated which would put this product in an unfavorable position in competition with gasoline distilled from crude? Does the low initial of No. 2 indicate danger of vapor lock?—C. W.

The United States Bureau of Standards, as a result of extended investigations of many gasolines in which numerous motor tests were made, has concluded that the starting performance of a gasoline is reflected in that part of the A.S.T.M. distillation curve from 5 to 25 per cent over. A good starting performance requires, for example, that domestic aviation gasoline shall not exceed 167° F. at the 5 per cent point, or 149° F. at the same percentage for the fighting grade, with a minimum of 122° F. for both grades.

The products from these wells are represented by these outline tests:

	No. 1 well	No. 2 well
Gravity	64.7	66.0
	—Distillat'n pts.—	
	°F.	°F.
Initial	105	90
Per cent—		
5	146	133
10	152	152
20	170	169
50	228	217
90	354	356
95	408	410
98 (Max.)	444	420

These tests suggest that there is very little difference between the two, in fact all of the distillation points indicate that the failure to obtain exact checks may have been due to condition of the samples and some features under which the distillation tests were made.

It will be observed that the distillation temperatures for the first fractions come within the 122°-149° and 122°-167° F. at the 5 per cent point and that the 20 per cent point is 170°-169° F. The first of these compares very well with the aviation gasoline specification.

The importance of the 20 per cent point has been selected by many consumers as being the temperature when vapor locking may be expected, consequently little difficulty of this sort may be expected. The product does not meet the specifications for aviation in the upper range.

The recent announcement of the Federal Specification Board concerning the revision of specifications for U. S. Motor gasoline may be of interest. Distillation range—When the thermometer reads 167° F. not less than 10 per cent shall be evaporated. Not less than 50 per cent off at 284° F. Not less than 90 per cent off at 392° F. Certain temperature conditions may require a minimum of 149° at 10 per cent, with vapor tension not in excess of 10 pounds during the hot weather and 12 pounds during certain winter months. This product could not be expected to have a high vapor tension.

The conclusion is that, so far as the information at hand may indicate, the product is a good grade of gasoline.

CONDENSATION OF EXHAUST STEAM

In looking over your issue of April 2 I have noticed your reply to H. C.'s question regarding the condensation of exhaust steam.—J. W. M.

The letter is quoted.—Ed.

"Most condensers, either jet or barometric or surface, utilize water as a medium for absorbing the latent heat of the steam but apparently H. C.'s purpose is to utilize atmospheric air instead of water in order to lighten the load on his cooling tower. He may be successful in blowing this steam into a tall stack so that the water will come in contact with air in this stack and thereby be condensed, raining back to the bottom of the stack. Large openings should, of course be provided at the bottom of the stack in order to secure a constant circulation of air.

"Another method of doing this condensation would be to install condensing surface exposed to the air with the steam entering the top of pipes and depend on the wind velocity to provide an air circulation around the outside of the pipes. These pipes could be bare or finned provided the fins are fastened on without solder. The latter would probably make a less expensive unit because sufficient surface could be installed with much less pipe.

"The calculation of the amount of surface would be approximately as follows: '1,000,000 cubic feet per day of steam is equal to 1,500 pounds per hour, as steam at 210° F. has a density of .036 pound per cubic foot. The latent heat of this steam can be considered as 1,000 B.t.u. per pound so that the total heat to be removed would be 1,500 B.t.u. per hour.

"'Assuming the air to be 80° F. and to be heated to 100° F., 310,000 pounds per hour of air or 73,000 cubic feet per minute of air would be required.'

"Depending on the wind velocity and construction of the unit I should estimate that between 1,000 and 4,000 square feet of surface would be required.

"If your correspondent is interested I would be glad to work this out more accurately for him."

BRITISH ROAD TAR NO. 3

It would be appreciated if you will give the British specifications covering Tar No. 3, used on roads? This is reported to be a new specification recently published—J. E. B.

The specification was prepared by the British Road Tar Association to provide for a tar suitable for the manufacture of tarmacadam laid by the hot or semi-hot process, and is issued as a British standard by the British Engineering Standards Association.

British Standard Specification for Tar (No. 3) for Road Purposes

The tar specified is suitable as an alternative to the use of Tar No. 2.

It is stated that the tar, when tested according to the methods described in appendices to the specification, shall conform to the requirements specified in the following table:

	TAR NO. 3
Specific gravity at 15° C. not lower than	1.160*
Specific gravity at 15° C. not higher than	1.260
Water or ammoniacal liquor, not more than	0.5% by weight
Other distillate (light oils) below 200° C., not more than	1% by weight
Distillate between 200° and 270° C., within the range	6-12% by weight
Distillate between 270° and 300° C. (heavy oils), within the range	3-8% by weight
Phenols or crude tar acids, not more than	2.0% by volume
Naphthalene, not more than	3.0% by weight
Free carbon, within the range	8-22% by weight
Consistency or viscosity, at 35° C., within the range	70-120 secs.†

*Note—In the case of tar produced from Scottish coals carbonized in vertical retorts, a specific gravity at 15° C. not lower than 1.130 will be accepted.

†Note—Although the above maximum of 120 seconds is specified, surveyors may at their discretion specify higher consistencies when required.

The secretary to the ministry of transport makes the following announcement:

In connection with the new Specification No. 76, Part 2, 1931, for Tar (No. 3) for Road Purposes, which has recently been published by the British Engineering Standards Association, the minister of transport has decided that tar prepared in accordance with the new specification may be used on works qualifying for grant from the road fund.

Tar so prepared is suitable for the manufacture of tarred macadam laid by the hot or semihot process, as an alternative to the use of Tar No. 2, the composition of which is set out in the British Standard Specification No. 76, 1930.

Copies of the specification (No. 76, Part 2, 1931) may be obtained from the British Engineering Standards Association, Publications Department, 28 Victoria Street, London, S.W.1, 2s. 2d. post free.

WATER DISSOCIATION TEMPERATURE

Could you give me the temperature at which water or steam will decompose?—D. B. O.

Water is one of the most stable compounds and while quite easily separated into its elements by means of the electric current, cannot be dissociated by heat except at quite high temperatures. Water begins to decompose into hydrogen and oxygen at 1,000° C., or 1,832° F., but there is a constant tendency for the elements to recombine so at the different temperatures above 1,000° there must be a new equilibrium established at each temperature.

The decomposition cannot be said to be very much accelerated as the temperature is increased. The data show that under a pressure of one atmosphere the dissociation at 1,100° C. is less than 0.01 per cent but at 2,000° C., 3,632° F., the percentage decomposition is equivalent to only 1.8 per cent.

References—Taylor. Treatise on Physical Chemistry, Vol. 1, 327. Marks, Mechanical Engineers Handbook, page 368.

SEDIMENT AND WATER IN CRUDE OIL

Would like information as to what methods are in general use in determining the cut on crude deliveries to refineries and to connecting pipe lines? Is it the general practice to base the cut on samples tested by centrifugal machine or heat settled samples or both? What temperature should be maintained in sweat box? Is there a book covering this ground?—C. H. D.

There are several methods for determining sediment and water, frequently termed B.S. and W., a few of which have been standardized and recognized in government specifications. The conditions in the field and those at the refineries are not the same. An oil must be tested in the field by the most convenient method but at the refinery laboratory methods are used because the facilities are provided.

The commonly recognized methods for field use are the hand centrifuge and by settling, both of which will give reproducible results if some set of conditions are maintained. The most difficult condition to control is temperature, especially during the winter months. Little objection is made to the use of these methods in the field on the part of the seller as the results are lower than those obtained by the more accurate laboratory methods. Some inspectors made these tests on a mixture of the oil with gasoline, but this may give high results due to the fact that asphaltic material is insoluble and is precipitated so is measured as sediment.

The standard methods for determining sediment and water are those that have been perfected by the American Society for Testing Materials, as published in Technical Paper 323B and obtainable from the superintendent of documents, Washington, D. C., for 15 cents. These are laboratory methods; including water and sediment by the centrifuge, water by distillation, and sediment by extraction. The centrifugal method provides that the oil shall be diluted with benzol and the water and sediment thrown down by centrifuging under prescribed conditions. The percentage of water found by this method is usually lower than the actual water content, which is more accurately determined by distillation. The Federal Specification Board recognizes, in Technical Paper 323B, a method for the separate determination of sediment by extraction and filtering; however, this method has not been adopted as standard by the A.S.T.M.

Crude oil is usually purchased on the basis of a 3 per cent deduction at the storage tank without any allowance for B.S. and W. It is expected that the oil in the tank will be clean pipe line oil, so if it does carry sediment and water it may be rejected unless otherwise provided for by contract. While not required to do so, the pipe lines and refiners often permit oil to be accepted when containing up to 1 per cent sediment and water, either with or without deduction. Some contracts have provided that oil may be accepted up to 2 per cent with a deduction for anything above 1 per cent.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 51)

Lucky Strike Oil Co.'s No. 1 Chaffraix, 200 ft. S, 200 ft. E, C, Sec. 32-13-10 ..... T.A. 3,010 ft.

RICHLAND PARISH

Alto Gas Co.'s No. 2 Hunt, 660 ft. S and E, NW cor., Sec. 13-17-5 ..... Derrick.
Southern Carbon Co.'s No. 2 Rosengraut & Ducomb, 1,980 ft. N, 660 ft. E, SW cor., Sec. 19-17-6 ..... Rigging up.
Southern Carbon Co.'s No. 3 Rosengraut & Ducomb, 660 ft. S and E, NW cor., Sec. 30-17-6 ..... Location.
Southern Carbon Co.'s No. 1-B C. M. Noble, 2,966 ft. N, 1,525 ft. W, cor. Secs. 7, 8, 17 and 18, in Sec. 37-15-6. Location.
United Gas Public Service Corp.'s No. 4 Earle, SE cor., Sec. 1-16-5e ..... Tested dry 2,581 ft; plugged back to 2,465 ft.

SABINE PARISH

Durham Oil Co.'s No. 1 Polly (was Davis et al's), NE cor. NE NE, Sec. 18-8-12 (was Stacy et al's) ..... S.D. 3,722 ft.
Diffie & Barnett's No. 1 Lites (was J. W. Clark's), 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 34-8-11 ..... S.D. 105 ft.
R. L. Gay, tr.'s No. 1-A Long Bell Lbr. Co., 430 ft. S, 200 ft. W, NE cor. NW NW, Sec. 10-8-13 ..... Drlg. chalk rock 2,418 ft.
Lacey Prod. Co.'s No. 1 Cooper, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 30-8-11 ..... W.O.S.R.; T.D. 2,620 ft.
Lide et al's No. 2 Ponder, 300 ft. S, 200 ft. E, NW cor. NE NW, Sec. 15-7-11 ..... Abd. 2,520 ft.
Jean Longoria's No. 1 Belton (no check), Sec. 31-9-13 .. S.D. 1,400 ft.
H. W. Perritt's No. 1 Bowman-Hicks, SE cor. SE NE, Sec. 2-7-13 ..... Derrick.
H. W. Perritt's No. 1 Boring, NW cor. NW NW, Sec. 11-7-13 ..... 2,000 ft. oil in hole 2,602 ft.
Sabine Royalties Co.'s No. 1 Skinner, SW NW, Sec. 5-8-11. S.D. for wtr. 2,138 ft.
Stovall Drlg. Co.'s No. 1 Nulton, SE cor. NW NE, Sec. 1-7-13 ..... Began May 9; set 10-in. 100 ft; drlg. 400 ft.
A. H. Thames' No. 1 Edward est., 150 ft. NW SE cor. NE SE, Sec. 8-8-13 ..... S.D. for wtr. 1,200 ft.
John Woodley's No. 1 Sabine Lbr. Co., 400 ft. S, 330 ft. W, NE cor. SE, Sec. 12-8-12 ..... Tested dry 2,403 ft; drlg. 2,552 ft.

TENSAS PARISH

A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 ..... Fishing for D.S. 3,475 ft.

UNION PARISH

Nemours Corp.'s No. 1 McGaugh, 770 ft. N, 651 ft. E, SW NW, Sec. 24-22-3 ..... Drlg. 750 ft.

WEBSTER PARISH

Coyle, tr.'s No. 1 Frazer, 200 ft. N, 200 ft. E, SW cor. NE SE Sec. 27-23-11 ..... Derrick.
Red Hawk Oil Co.'s No. 1 Mathews, 330 ft. N, 330 ft. E, C, Sec. 11-23-9 ..... S.D; W.O. 2,797 ft.

WEST CARROLL PARISH

United Gas Public Service Co.'s No. 1 Pioneer Cooperage, 663 ft. E, 3,954 ft. S, NW cor., Sec. 29-21-9 ..... Drlg. 1,529 ft.

ARKANSAS
CHICOT COUNTY

R. R. Smith's No. 1 Lytle, 660 ft. N, 660 ft. E, C, Sec. 21-28-3 ..... T.A. 2,925 ft.

COLUMBIA COUNTY

Joe Modisette et al's No. 1 Sharklee, C SW NE, Sec. 33-16-19 ..... Began May 10; set 10-in. 41 ft.
Kendall Oil Co.'s No. 1 Fullenweider, Rhea & Kitchen Sec. 13-17-22 ..... S.D. 778 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W, C NW SE, Sec. 4-20-8 ..... S.D; clearing titles 1,214 ft.

CLEBURNE COUNTY
(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 33-11-9 ..... S.D. 3740 ft.

DALLAS COUNTY

E. C. Brewer's No. 1 W. E. Hillman, 330 ft. E, 40 ft. S, NW cor. SE NE, Sec. 20-10-13 ..... S.D; W.O. 2,846 ft.
J. H. James, tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. NW NE, Sec. 11-9-15 ..... S.D. changing D.S. 2,520 ft.

GARLAND COUNTY
(Cable tools)

Givins et al's No. 1 Garrett, 660 ft. S, 660 ft. W, C, Sec. 1-8-19 ..... Dry and abd. 3,756 ft.

GRANT COUNTY

Spann & McClung's No. 1 Sarah Page, 660 ft. W, 660 ft. S, NE cor. NW, Sec. 3-3-12 ..... U.R. 7-in. csg. 226 ft; T.D. 1,024 ft.

HOT SPRINGS COUNTY

John Watkins' No. 1 Cunningham (was J. R. Lockhart's), 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16... S.D. for funds 220 ft.

LAFAYETTE COUNTY

McIver et al's No. 1 Hattie, NW cor. NE, Sec. 1-20-6 .... T.A.
Smitherman & McDonald's No. 1 Rogers, 330 ft. N and E, SW cor. NW SE, Sec. 17-15-22 ..... Began May 8; set 10-in. 100 ft; drlg. 1,015 ft.

LINCOLN COUNTY

Lawrence Cook, tr.'s No. 1 McGhee Planting Co., 420 ft. S, 220 ft. W, NE cor. NE SW, Sec. 5-8-7 ..... Drlg. gummy shale 682 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-29 ..... Location.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 13-8-26 ..... S.D; W.O. 3,570 ft.

MILLER COUNTY

East Texas O. & G. Co.'s No. 1 Harvey, 500 ft. E, 300 ft. S, NW cor., Sec. 2-15-26 ..... T.A. 910 ft.
E. & F. Oil Co.'s No. 1 E. L. Beck, 200 ft. S, 200 ft. E, NW cor. SW, Sec. 36-15-26 ..... T.A. 2,968 ft.
Fitzwater et al's No. 1 Beck, 200 ft. N, 200 ft. W, SE cor. SW SE, Sec. 33-15-26 ..... T.A. 93 ft.
J. D. McRae's No. 1 Smith, 150 ft. N, 150 ft. W, SE cor., Sec. 28-15-26 ..... Derrick.

OUACHITA COUNTY

Copenhaven et al's No. 1 Elliott, Sec. 11-15-17 ..... Bailed dry 2,210 ft; S.D; W.O.
Boling & McLeon's No. 1 L. D. Nealy, 150 ft. S, 150 ft. W, NE cor. SE SW, Sec. 25-16-15 ..... Began May 7; set 10-in. 150 ft; drlg. 1,026 ft.

PIKE COUNTY

E. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14 ..... T.A. 2,940 ft; drlg. wtr. well.
E. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 31-8-24 ..... Began May 7; set 10-in. 198 ft; S.D.

POPE COUNTY

Ark.-La. P. L. Co.'s No. 1 Baird, 760 ft. S, 660 ft. E, NW cor., Sec. 11-7-20 ..... S.D. repairing rig 4,115 ft.
Ark.-La. P. L. Co.'s No. 2 McFaddin, 685 ft. N, 485 ft. W, SE cor. Sec. NE SW, Sec. 15-9-21 ..... Dry and abd. 4,368 ft.

SCOTT COUNTY

Heavener O. & G. Co.'s No. 1 Riser, Sec. 36-4-26 ..... Fishing for bit; cor. T.D. 1,436 ft.
Waldron O. & G. Co.'s No. 1 White, NE cor. SW NW, Sec. 17-3n-29 ..... S.D; waiting on csg. 1,860 ft.

UNION COUNTY

Chapman & Wilson's No. 1 A. H. Hadley, 330 ft. N, 330 ft. E, SW cor. NE SW, Sec. 2-18-13 ..... 600 ft. fluid 30% S.W. in hole; T.A. 3,570 ft.
Wilson & Chapman's No. 1 N. Parker, 330 ft. S and W, NE cor. NE SE ..... Reaming to bottom 3,200 ft.

VAN BUREN COUNTY

Glenn Kohle et al's No. 1 Scalan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-13 ..... T.A. 50 ft.

WASHINGTON COUNTY
(Cable tools)

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... S.D. for funds 1,795 ft.
H. H. Taylor et al's No. 1 Runny, C NE SW, Sec. 1-12-29. S.D. 1,700 ft.

YELL COUNTY
(Cable tools)

Tegmeier & Luckett's No. 1 Falcon, Sec. 36-7-21 ..... S.D. 5,710 ft.

EAST TEXAS
BOWIE COUNTY

Devore & Midfield's No. 1 Roy B. Cooper, 200 ft. S, 200 ft. W of NE cor. R. B. Cooper 115-ac. tr., Wm. Ward Sur. ..... S.D. 1,800 ft.
Hindeman & Ball's No. 1 Merritt (was Maud-Redwater Oil Co.'s), 175 ft. N, 175 ft. E, SE cor. G. W. Hardidge 100-ac. tr. on Floyd Merritt tr. in Y. S. McKinney Sur. ..... S.D. 2,316 ft.
Tarkington & Jones' No. 1 W. W. Whybark, 200 ft. S, 200 ft. W of SW cor. J. H. Dyer Sur. ..... Derrick.
Lee Timberlake et al's No. 2 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur. ..... Coring hard sand 2,995 ft.

CAMP COUNTY

McDonald Bros.' No. 1 Tillery, 150 ft. E, 450 ft. S, NW cor. 127-ac. tr. in J. H. Murphy Sur. ..... S.D. 3,600 ft.

CASS COUNTY

E. K. Atkinson's No. 1 T. J. Wilson, 1,088 ft. S of N line, 2,376 ft. E of W line of H.R.S., J. R. McFarland Sur. ..... Derrick.
R. G. Baker's No. 1 W. R. Caver, on W. R. Caver 75-ac. tr., John Lick Sur. ..... Began May 11; set 12-in. 180 ft.
Davis & Pigg's No. 1 Roy Brian, SW cor. Roy Bryan 88-ac. tr., Albert H. Latimer Sur. ..... S.D. 1,975 ft.
Geo. McKamie's No. 1 R. E. Hall, 150 ft. N, 150 ft. W, SE cor. Hall's 117-ac. tr., H. Buckler Sur. ..... Drlg. shale 1,900 ft.
C. E. Murdock's No. 1 First National Bank, Evans Watson Sur. ..... Reaming to bottom 3,850 ft.
Olds & Smith's No. 1 Atheny, 3,056 ft. W-E line, 856 ft. S-N line, J. C. Ayres Sur. ..... Drlg. 2,055 ft.
John C. Rogers' No. 1 I. E. Lanier, 573 ft. N, 879 ft. W, SE cor. Lanier 86 ac. in K. E. Welborn Sur. .... S.D. 2,275 ft.
John C. Rogers et al's No. 1 W. Q. Henderson, 3,100 ft. S, 3,100 ft. E, NW cor., Wm. Davis Sur. ..... S.D. 955 ft.

HARRISON COUNTY

Wm. H. Atkinson's No. 1 O. D. Hays, 900 ft. E, 150 ft. S, NW cor. O. D. Hays' 46-ac. tr., J. H. Chaffin Sur.. Drlg. 550 ft.
Elmore & Bonner's No. 1 J. C. Lowery, in center of J. C. Lowery 81-ac. tr., W. W. O. Stanfield Sur. ..... Arranging to test 2,804 ft.
Everett Prod. Co.'s No. 1 R. L. Gypert, 1,320 ft. W of NE cor., 150 ft. at right angles from NE cor. of E. M. Wilder Sur. in Richard Hooper Sur. ..... Rigging up.
Gholson et al's No. 1 Bivins Farm Co., on J. K. Bivins, Jr.'s 320-ac. tr., Thos. Toby Sur. ..... Rigging up.
O. O. Olford et al's No. 1 R. W. Bolding, 330 ft. E of SE cor. J. B. Cullen's 161-ac. tr., 300 ft. N of N line of Mrs. C. L. Brown's 20-ac. tr., W. W. O. Stanfield Sur. ..... Drlg. 450 ft.
Geo. L. Pace et al's No. 1 T. G. and Eugene Barker, 710 ft. N of S line, 1,930 ft. W of E line, SE cor. 230-ac. tr., Victor Pedraso Sur. ..... Drlg. 3,620 ft.
O. H. Parkening's No. 1 T. J. Taylor, C, Blk. 32, W. H. Payne Sur. ..... Drlg. 750 ft.
O. H. Parkening's No. 2 T. J. Taylor, C, J. C. Hawley Sur. ..... Derrick.
Rowan & Nichols' No. 1 Bussey est., center of Bussey 125-ac. tr., E. H. Merchant Sur. ..... Derrick.
Ryan Consolidated Pet. Corp.'s No. 1 Dr. H. H. Key, 1,500 varas N of SE line, 500 varas E of SW line, of E. Carroll Sur. ..... Rigging up.
Seigel Bros. and Kelinson's No. 1 Taylor (no check), F. O'Neil Sur. ..... Derrick.
Thomas & Kinsey's No. 1 J. R. Watson, Thos. Iden Sur. . Derrick.

MARION COUNTY

Gist, Claunch & Dodson's No. 1 Miller, 1,470 ft. E line, 750 ft. N line, SW cor. H. Fulgran H.R. Sur. ..... Rigging up.
Geo. Hindman et al's No. 1 F. V. Lindsey, 2,500 ft. S. most northerly N line, 3,555 ft. E most easterly W line, Alexander Albright Sur. ..... Drlg. 2,450 ft.
Hindeman & Rhondo's No. 1 McGaughey, 1,547 ft. W. most northerly SW cor., 1,638 ft. N most northerly S line, W. J. Willis Sur. ..... S.D. 3,025 ft.
P. E. Hussey's No. 1 A. A. Trammell, Chas. Lockhart Sur. ..... S.D. 1,884 ft.
Shelton et al's No. 1 J. M. McNeal, 800 ft. S, 400 ft. W, NE cor. McNeal's 721-ac. tr., R. Fowler Sur. .... Rigging up.

PANOLA COUNTY

Everette Drlg. Co.'s No. 1 E. L. McDaniels, 200 ft. S, 200 ft. W, NE cor. McDaniels' 116 ac., Alanson Barr Sur. ..... S.G. 1,315 ft; arranging to test.
Moses & Wallace's No. 1 Daniel, 600 ft. N and W lines, Mrs. Gerrell 100-ac. tr., SW cor. Isabel Hanks Sur... Derrick.
The Texas Co.'s No. 2 G. W. Brumble, 400 ft. S, 200 ft. E, NW cor., Jno. Womack Sur. ..... Drlg. shale 4,642 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. .... S.D. 2,795 ft.
Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. .... S.D. 2,280 ft.

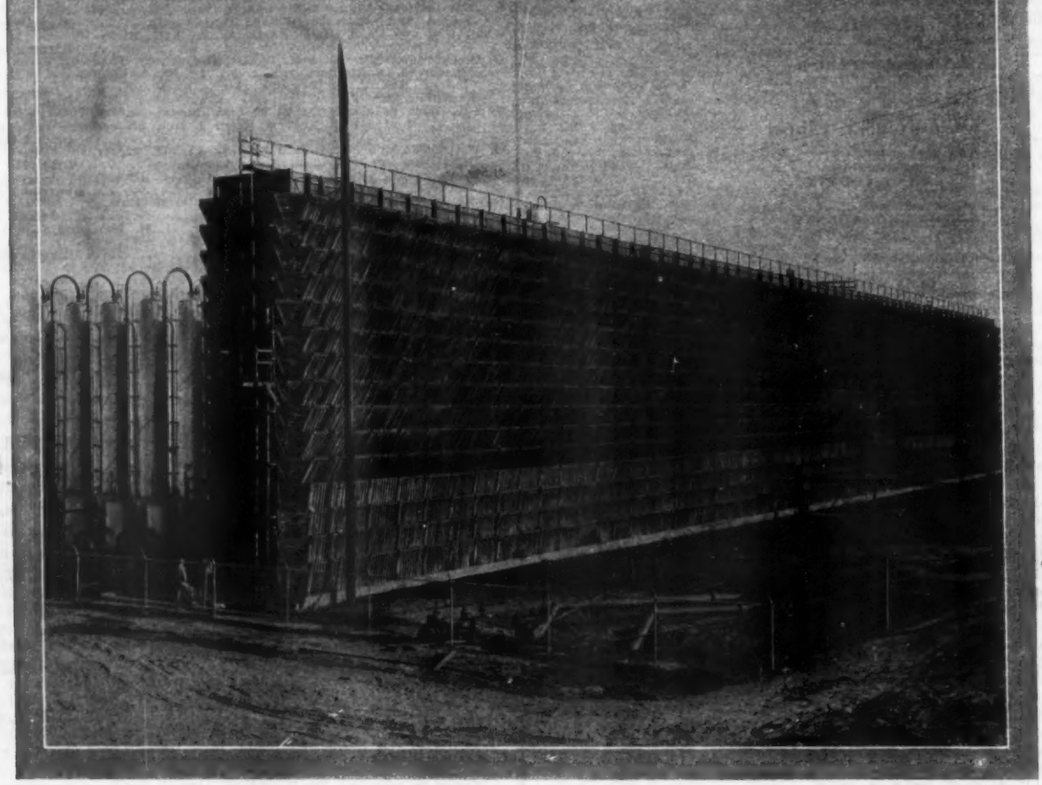
SHELBY COUNTY

I. M. Bradley's No. 1 Ashberry (no check), G. W. Mitchell Sur. ..... Drlg. 1,810 ft.
E. L. Chapman's No. 1 Pickering Lbr. Co., C. E. Henry (headright) ..... Drlg. 3,180 ft.
Chapperell Oil Co.'s No. 2 Holt, Matthew Moore Sur. ... S.D. 3,111 ft.
H. H. Gracey's No. 1 J. A. Morrison, 1,600 ft. N, 200 ft. E, SW cor. J. A. Morris' 109-ac. tr., Wm. English Sur. ..... Drlg. 400 ft.
Joiner et al's No. 1 Foster & Billingsly, 150 ft. W of CEL Foster & Billingsly's 109-ac. tr., J. Bowlin Sur.. Derrick.
T. A. Martin's No. 1 J. B. Bush, S 8° E, 2,000 ft. from NW cor. J. B. Bush's 77-ac. tr., thence E at right angles to said line 200 ft., Alfred Lindsey Sur. .... Moving in rig.
Henry Maulding's No. 1 Frost Lbr. Co., NE cor. Frost Lbr. Co.'s 80-ac. tr., A. D. Fountain Sur. ..... Changing rigs 1,610 ft.
Schultz et al's No. 1 Hughes, 150 ft. SW cor. Hughes' 110-ac. tr., J. Clay Sur. ..... Began May 12; drlg. 50 ft.
Sloan Prospecting Co.'s No. 1 Sanford, approximately 300 ft. N and 200 ft. E, SW cor. B. Sanford 49-ac. tr. in M. M. Vann Sur. ..... Drlg. 1,100 ft.
Sloan Prospecting Co.'s No. 1 Windham, H. English H.R.S. ..... Set 6⅝-in. 2,652 ft; arranging to test.

SUMMARY OF STATEMENTS MADE MAY 10, 1931, RELATING TO BUSINESS OF VARIOUS PIPE LINES FOR MONTH ENDING APRIL 30, 1931

	Gross stocks	Runs from wells	Other receipts	Regular deliveries	Other deliveries
Nat. Transit	790,741.10	142,938.57	887,859.53	480,757.15	504,542.85
S. W. Pa. P. L.	538,721.14	75,998.00	801,208.52	386,704.21	323,744.35
Eureka P. L.	1,762,107.52	294,234.07	299,192.81	200,604.46	457,318.95
Buckeye P. L. (Macksburg)	513,877.24	300,478.22	110,006.29	230,921.29	237,253.36
Buckeye P. L. (Lima, etc.)	3,730,603.33	78,452.79	2,602,931.30	1,677,678.11	912,019.73
Buckeye P. L. (Cleveland)	46,073.83	11,192.35	189,886.19	2,198.31	201,808.52
Indiana P. L.	603,583.09	2,975.14	1,578,739.58	998,276.65	592,140.29
Cumberland P. L.	659,658.19	166,133.49	.....	168,989.29	55,334.39
Southern P. L.	312,817.70	.....	144,772.01	20,351.93	82,029.99
Bradford Trans.	164,714.48	321,147.01	.....	324,367.08	.....
N. Y. Transit	109,007.83	28,562.30	110,271.22	174,908.27	3,289.75
Northern P. L.	291,059.44	.....	387,350.03	165,693.77	273,337.57
Tide Water Pipe	900,197.73	27,008.88	.....	451,375.06	.....
Tuscarora Dev.	15,173.80	.....	.....	283,195.69	.....
Total April 30	10,436,336.42	1,449,120.82	7,112,197.48	5,596,021.27	3,642,819.75
Total March 31	10,381,684.03	1,439,720.79	6,220,862.30	5,626,584.93	3,419,685.24
Difference	54,652.39	9,400.03	891,335.18	120,563.66	223,134.51

Braun
COOLING TOWERS



TWO YEARS AHEAD

The adjustable ventilated louvers (patented) so clearly shown in this photograph, were developed by our Research Engineers to overcome the annoyance and loss caused by wind-blown water without reducing the cooling efficiency of the tower. They were first used commercially in a California oil field in September, 1928. Since then 2650 sections — 3 miles of tower — ranging in height from 35 to 70 feet, have been installed in widely varying climates — significant testimony of their superiority.

C. F. BRAUN & CO. INC.

ALHAMBRA . NEW YORK . TULSA . HOUSTON

Brief Items for Petroleum Refiners

Considerable Plant Construction Under Way in Gulf Coast

By Neil Williams

HOUSTON, Tex., May 16.—Considerable new refinery construction has been going on and is under way on the Gulf Coast, including the addition of two entirely new plants. In contrast to former work, a large part of the building is by the smaller companies instead of the bigger refineries.

New plants include the American Petroleum Co., located at Norsworthy on the Houston Ship Channel and the Republic Oil Refining Co. at Texas City. The former plant, with a capacity of 4,000 bbls. was placed in operation recently, while the first unit of the Republic refinery is expected to be started up by the middle of June. The latter, when complete, will have a topping capacity of 5,000 bbls. daily but in addition, cracking facilities, yet to be determined upon, will be installed.

The American Petroleum Co., a J. S. Cullinan interest, has been engaged for many years in the marketing and terminalling of crude. The new topping plant, located adjoining its terminal.

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WILL START OPERATING EXETER REFINERY SOON

LOS ANGELES, Calif., May 18.—The refinery of the Exeter Oil Co. located at Hynes, Calif., is being reconditioned and will start operating before the end of the month, according to an announcement by W. R. Cowan, vice president and general manager of the company. The plant was purchased several months ago when the United States Refining Co. was sold to the Signal Oil & Gas Co. Several of the officials of the United States company are now active in the Exeter company.

The Exeter company has approximately 1,800 bbls. daily crude oil production and this will be refined at the refinery together with crude oil purchased from other producers. The Hynes plant adjoins that of the United States Refining Co. and also a plant of the Richfield Oil Co.

The Exeter company expects to expand all phases of its operation as conditions justify. Carl J. von Bibra, president of the company, is now en route to Germany on a business trip.

START VULCAN REFINERY

LOS ANGELES, Calif., May 16.—The Vulcan Refining Co. has completed the construction of a new type plant at East Twenty-sixth Street, Vernon, and will start test runs before the end of the month. The plant, which has a capacity of 1,600 bbls. daily, adjoins the refinery of the Vernon Oil Refining Co., with which it is affiliated in ownership and management.

The plant incorporates methods developed by Neil Blaine. The principal products will be antiknock gasoline, Diesel oil and road oil.

ENLARGE BURFORD PLANT

The East Texas Refining Co. plant at Longview, Tex., built by F. W. Burford and associates, is being enlarged to 10,000 bbls. capacity. This refinery was originally designed for 6,000 bbls. and the addition will bring the total capacity of the East Texas Refining Co.'s two plants in the East Texas area to 16,000 bbls. The other plant is located at Henderson, Tex., and is also operating.

MOTOR OIL CONSUMPTION GAINS RAPIDLY AT HIGH ENGINE SPEED

Motor oil consumption increases six or seven times when car speeds jump from 30 to 55 miles per hour.

Increased gasoline consumption tends to offset the savings in motor oil consumption when heavy oils are used in cars.

The foregoing were the outstanding results obtained from a 9,000-mile test recently conducted at the Indianapolis speedway by the contest board of the American Automobile Association acting for the Standard Oil Co. of Indiana. The following stock cars of the 1931 type were used in the test: Buick, Chevrolet, Chrysler, Cord, Ford Tudor, Hudson, Nash, Oldsmobile, Cadillac, Pontiac, Reo, Studebaker and Willys-Knight. More than one model was used in the case of the Ford and Chevrolet.

After a 2,000-mile run-in, two tests were made at 30 miles an hour and five at 55 miles an hour. Over 600,000 separate observations were taken by those in charge of the test. As soon as the car was purchased it was sealed against replacement of any important mechanical parts and equipped with thermometers to enable the recording of crankcase oil temperature and water outlet temperature.

Red Crown Ethyl Gasoline was used as motor fuel for all cars and the following engine oils: Iso-Vis No. 30 (medium); No. 50 (heavy); No. 60 (special heavy); Polarine No. 40 (heavy), and a heavy motor oil S.A.E. No. 50 (a widely advertised, premium priced Pennsylvania oil). Products were selected at random from commercial stocks.

The following tests were made:

Test No. 1—1,000 miles at 30 miles per hour, using Iso-Vis motor oil No. 50 (heavy). This mileage continuous, with stops only for fuel and oil. Careful recording was made of the gasoline consumption, oil consumption, and, at the conclusion of the test, the engine carbon in grams per cylinder and cylinder wear.

Test No. 2—1,000 miles at 30 miles per hour, using Polarine No. 40 (heavy). Exactly the same conditions as Test No. 1.

Test No. 3—1,000 miles at 55 miles per hour, using Iso-Vis motor oil No. 50 (heavy). All other conditions exactly the same as above.

Test No. 4—1,000 miles at 55 miles per hour, using a widely advertised premium priced Pennsylvania oil, S.A.E. No. 50 viscosity. All other conditions exactly the same as above.

Test No. 5—1,000 miles at 55 miles per hour, using Polarine No. 40 (heavy). All other conditions exactly the same as above.

Test No. 6—1,000 miles at 55 miles per hour, using Iso-Vis motor oil No. 60 (special heavy). All other conditions exactly the same as above.

Test No. 7—1,000 miles at 55 miles per hour, using Iso-Vis motor oil No. 30 (medium). All other conditions exactly the same as above.

Heavy Oil Consumption

It was found that the cars used an

(Continued on Page 119)

MOVES TO ALBUQUERQUE

H. H. Kinnaird, who has been superintendent of the Continental Oil Co.'s refinery at Artesia, has taken charge of the same company's plant at Albuqueque and has removed to the last named city. The Continental company took over the Gilliland refinery at Albuquerque several months ago.

BUYS WINNETT PLANT

The plant at Winnett, Mont., formerly owned by the Weowna Refining Co., has been purchased by Eugene Hunt and associates of Lewistown, Mont. The new owners expect to operate the refinery.

REOPEN LAWLER PLANT

LONG BEACH, Calif., May 15.—Grover Lawler has started running crude in the Empire refinery located near here and is accepting deliveries on a co-operative cost-plus refining basis. The plant was built two years ago and passed through a receivership last year. Mr. Lawler purchased it and added towers and tankage to bring its capacity to 4,500 bbls. daily. The plant is now operating under the name of the Lawler Refining Co.

JOINS UNIVERSAL STAFF

Alfred Fisher of London and New York, has joined the staff of Universal Oil Products Co., Chicago, to carry on certain phases of research and development work. Mr. Fisher is a chemist and chemical engineer who has for years specialized in development work in connection with coal and gas.

For five years he was research director of a large British company engaged in this work, and during the past five years has been active as a consulting engineer, with headquarters in New York. He has for some time been giving part of his time to Universal Oil Products Co.

SMALL EAST TEXAS REFINERY OPERATING

Five hundred-barrel topping plant of the Boone Refining Co., east of Arp. It started operating last week with Joiner crude oil.

JACOBI, BUYING MANAGER FOR VACUUM COMPANIES

W. P. Jacobi, who has been manager of the Petroleum Purchase Division of the Wadhams Oil Co. with headquarters in Tulsa for several years, has been appointed Mid-Continent purchasing representative for the following additional concerns: White Star Refining Co., Detroit, Mich.; Lubrite Refining Corp., St. Louis, Mo.; Perfect Oil Corp. and Barkhausen Oil Corp., Green Bay, Wis.

These companies are all subsidiaries of the Vacuum Oil Co., as is the Wadhams

W. P. Jacobi

Oil Corp. Purchases for all the companies will be handled through the Tulsa headquarters located in the Philcade Building.

Through his long association with the Wadhams corporation, Mr. Jacobi has been one of the largest independent buyers of crude oil and refined products in the Mid-Continent Field. The Wadhams corporation, through the Bartles-Maguire Oil Co., operates a refinery at East Chicago, Ind. The White Star company operates refineries at Detroit and Wood River, Ill., and the Lubrite company has a refinery at East St. Louis. The Perfect corporation and Barkhausen corporation are large jobbing concerns of the Middle West.

OPERATE PLANT WITH GAS

The refinery of the Northwest Stellarene Co., located at Shelby, Mont., will be operated with natural gas as fuel. A pipe line connecting the refinery with a new gas well owned by Johnson-Lutz, 5 miles northeast of the refinery, is being built.

BUILDING PLANT IN NEW MEXICO

SAN ANTONIO, Tex., May 16.—Gray Coggin is constructing a topping plant of 125 bbls. capacity on the Grayburg Oil Co. lease in Section 24-17-19, Eddy County, New Mexico. This plant is located in what is known as the Maljamar area.

ANALYSES OF MOTOR FUEL

CHATHAM, Ontario, May 16.—Analyses made by the fuel research laboratories of the Department of Mines at Ottawa on samples collected in 1930 from the chief distributing centers throughout Canada indicate a steady improvement in the quality of motor fuels, and particularly of the premium grades of gasoline.

RESIDUE GAS BECOMING FACTOR OF IMPORTANCE

(Continued from Page 34)

is entitled. Since the gasoline plant operations are subservient to the production of oil it is very evident that the successful operation of a gasoline plant depends upon the successful operation of the oil leases.

Of course, the primary use for residue gas is to operate the gasoline plant and fuel for lease operation and development. Should there be a surplus after these requirements have been met every effort should be made to utilize such surplus by returning it to the sand or for flowing wells. This use, of course, is up to the producer, however, in the opinion of the writer the gasoline manufacturer should give every possible aid to the producer to develop such use to the extent of working out some equitable plan of furnishing the necessary pressure.

It is a logical assumption that the greater the volume of residue utilized for returning to the sand or lifting oil, the greater the volume of oil produced. By this same token the ultimate production of natural gasoline will be increased. We are all interested in seeing the life of our gasoline plant lengthened and should the particular sand from which we are processing casinghead gas be the type that the use of either of these methods would be economically sound, we should encourage such use.

Should there be a surplus of residue gas after having supplied the above requirements it is then necessary that we solve our second problem.

In attempting to develop a market for surplus residue gas we must realize that we have at present only two major markets to be considered, which are natural gas pipe line and carbon black plants. To deliver gas to either of these we will be required to make the gas available to them under the particular requirements and conditions of their respective industry.

The most important factors are the volume of gas which we have available, which will, of course, determine whether it will be a paying proposition for a gas pipe line to connect their system to the plant or for a carbon black plant to be constructed. The volume which will be available for sale will be determined by the amount of casinghead gas processed and its gasoline content, the requirements for operating purposes and the expected life of such surplus. With a sufficient volume of surplus residue gas of reasonable longevity the difficulties of developing a market can generally be overcome.

The performance of the Burbank Field gives the following picture for the period from 1920 to 1930, inclusive:

Total gas produced	338,000,000 M. ft.
Residue gas sold	62,000,000 M. ft.
Per cent sold	18 2/10

The field had been producing for approximately two years before the volume of residue available and the estimated life of the field showed that necessary investment in booster stations and gas pipe lines would be justified. After the first booster stations were installed we have the following picture:

Total gas produced	276,500,000 M. ft.
Residue gas sold	62,000,000 M. ft.
Per cent sold	22.4
Average daily sales	21,233 M. ft.

During the year of 1925 a total of 11,634,629,000 feet was handled out of the field on which royalty was paid. This was the maximum yearly sale and amounts to a daily average of 31,876,000 feet.

At the present time when pipe lines of 20 inches diameter and larger are being laid in lengths of 1,000 miles or more, the handling of a maximum daily average of 31,876,000 feet and a daily average of 21,233,000 feet over an eight-year period would seem simple. We must remember, however, that the handling of residue gas was in its infancy at the time the Burbank Field situation came up and it was a very hard problem to solve at that time.

The following figures were furnished the writer which indicate the situation in the Panhandle of Texas during January, 1931, and are daily averages:

Total gas produced	1,145,220 M. ft.
Available gas surplus	908,321 M. ft.
Per cent available	79.4
Total residue sold	456,810 M. ft.
Per cent sold	39.9

These two fields are compared because they represent the two extremes, one producing rich and one lean gas. We can very naturally expect a much higher percentage of residue to be available from the lean than from the rich gas.

At the present time the carbon black industry is the major purchaser of residue gas; however, the natural gas pipe lines are rapidly increasing their requirements. One of our member companies have just completed a booster station with a capacity of 50,000,000 feet daily for delivering residue gas to a gas pipe line.

The present trend in the oil industry toward conservation of gas seems to definitely point to a policy of producing only such gas as can be utilized. As this policy becomes more and more effective the gasoline manufacturer will be called upon to aid in the disposition of the residue. It will be necessary that the residue gas be utilized by one of the methods mentioned above or by storage for future use in another sand than that from which it was produced.

The disposal of residue gas may very naturally be expected to increase in importance as the policy of conserving all gas becomes more effective. Should the point of complete conservation be reached and only such gas be produced as can be utilized or stored, then all oil production and natural gasoline production will be subservient to the disposition of the residue gas.

The gasoline manufacturer is in a better position to work out the problem of disposing of the residue gas by installing equipment required for such disposition in addition to their regular gasoline plant equipment than are the individual producers, who would be required to handle the gas in much smaller volumes. It will, therefore, be sound economy for the gasoline manufacturer to handle the residue, since he can do so at a lower cost.

The disposal of residue is a problem of ever-increasing importance and will some day be the most important factor in our gasoline plant operations.

WORK IS BEGUN ON SUN PIPE LINE, EAST TEXAS

(Continued from Page 32)

south of Beaumont on the Beaumont ship channel. The line, which will be owned on a 50-50 basis by Sun Pipe Line Co. and Yount Lee Oil Co. of Beaumont, also will connect directly with the latter company's tank farm and terminal at Spindletop. Acetylene welding will be used throughout the line.

The line is being laid primarily to furnish a tidewater outlet for production of these two companies in East Texas fields. Both companies have acquired extensive holdings there. Sun's share of the oil will be moved through that company's terminal to refineries of the Sun Oil Co. on the Atlantic Seaboard. Yount Lee Oil Co. has no refineries but has established crude market connections through its terminal. The latter company's tank farm is one of the largest on the Gulf Coast. Previous to its entrance into East Texas, Yount Lee Oil Co. confined its operations to the Gulf Coast.

The line will have an initial capacity of 30,000 bbls. daily with three stations, the first at Troup, Rusk County; the second at Diboll, Angelina County; and the third at Sour Lake, Hardin County. Later, additional stations will be built, one located midway between each of the above mentioned stations. These will increase the capacity of the line to above 45,000 bbls. daily.

Work also is being started on the erection of four 80,000-bbl. tanks at Troup station, which will be the largest storage on the system, except the coastal terminals. A gathering system will provide a network of lines to connect properties of both companies as well as other production chiefly in the Longview district of Gregg County and extending into Upshur County.

Sun and Yount Lee Oil Co.'s project is the ninth through pipe line outlet provided to date for East Texas, including those already built and those actually under construction. It is the nineteenth major line coming to Gulf Coast tidewater from areas outside this district. These have capacities totaling more than 800,000 bbls. daily.

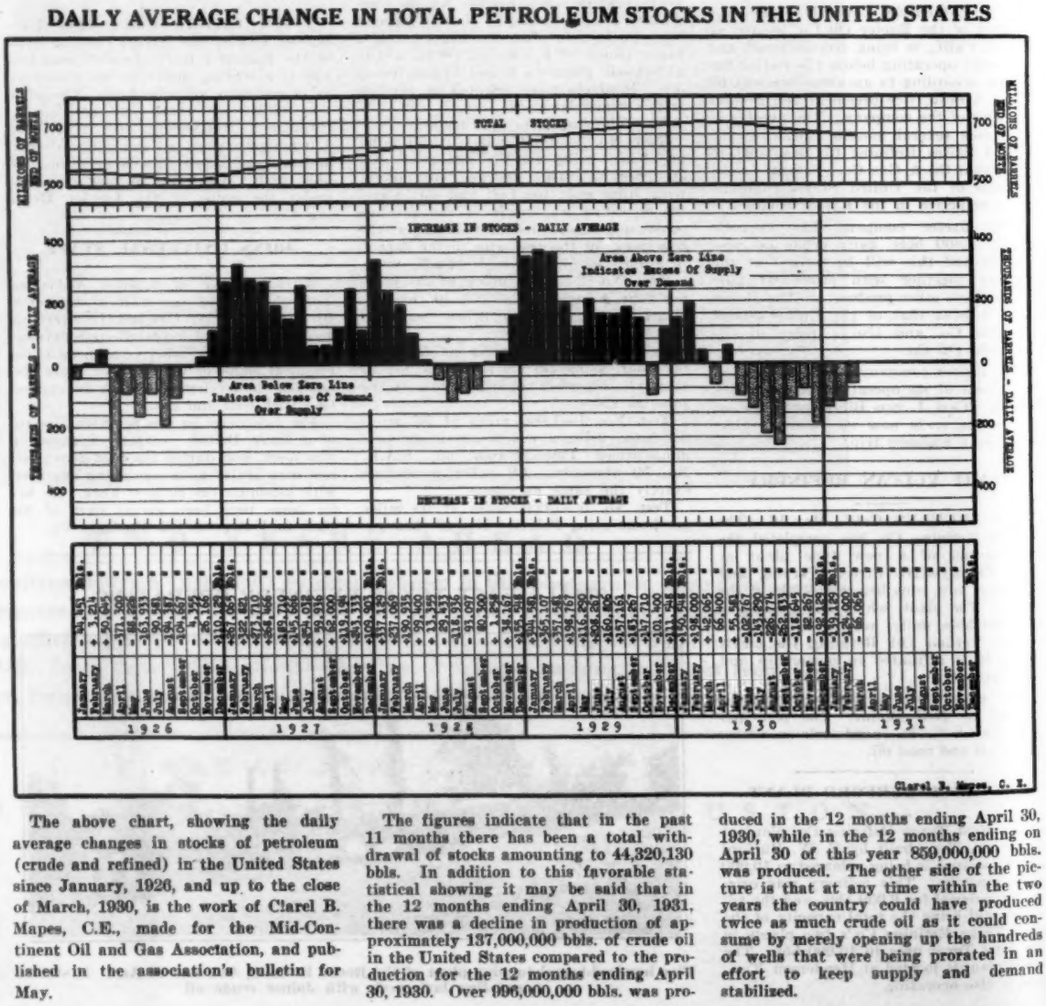
Construction and operation of the line will be under the supervision of R. W. Pack, vice president and general manager of the Sun Pipe Line Co. with offices at Beaumont, with W. C. Kinsolving as general superintendent.

COLOMBIAN OIL DECREE

The Colombian government has issued a decree providing that bids for exploration and exploitation of oil fields located in nonreserved territories shall be received by the Ministry of Industries on or after October 15.

The nonreserved areas are at the east of Eastern Cordillera, at the Putumayo Commissary and at the Amazonas. Bids for contracts on other nonreserved territories will be received on or after August 1.

DAILY AVERAGE CHANGE IN TOTAL PETROLEUM STOCKS IN THE UNITED STATES



The above chart, showing the daily average changes in stocks of petroleum (crude and refined) in the United States since January, 1926, and up to the close of March, 1930, is the work of Clarel B. Mapes, C.E., made for the Mid-Continent Oil and Gas Association, and published in the association's bulletin for May.

The figures indicate that in the past 11 months there has been a total withdrawal of stocks amounting to 44,320,130 bbls. In addition to this favorable statistical showing it may be said that in the 12 months ending April 30, 1931, there was a decline in production of approximately 137,000,000 bbls. of crude oil in the United States compared to the production for the 12 months ending April 30, 1930. Over 996,000,000 bbls. was produced in the 12 months ending April 30, 1930, while in the 12 months ending on April 30 of this year 859,000,000 bbls. was produced. The other side of the picture is that at any time within the two years the country could have produced twice as much crude oil as it could consume by merely opening up the hundreds of wells that were being prorated in an effort to keep supply and demand stabilized.

MOTOR OIL CONSUMPTION GAINS AT HIGH SPEED

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average of 1 quart of oil per 1,000 miles at 30 miles per hour, but jumped to 6.9 quarts per 1,000 miles at 55 miles per hour. Automotive engineers regard this finding as proof that the modern tendency toward driving at high speed is the main factor causing variations in oil consumption.

On the question of the advantage of using heavier grades of oil to reduce consumption, a direct comparison between medium, heavy and special heavy grades, all other conditions being equal, showed that consumption at high speed can be reduced about one-third by using the heavy summer oil in place of light winter oil. But this saving is at the expense of loss in gasoline mileage, as 7 per cent greater gasoline mileage was obtained while using the lighter oil, probably as the result of lower internal friction in the engine. The lesson appears to be that there is no good reason to vary from recommended viscosities, even for high speed driving.

Gas Consumption Higher

As had been expected, the test showed that the amount of carbon deposited was smaller at the high speeds, with the engines running comparatively hot, than at 30 miles an hour. Gasoline mileage was best at the lower speeds, averaging 13.13 and 12.94 miles per gallon in the two tests at 30 miles and from 10.24 to 11.08 miles per gallon at 55 miles.

The American Automobile Association verified by its finding the claim that prediluted oils do not thin out in the crankcase. The prediluted oils were slightly thicker at the conclusion of each test than at the beginning, owing evidently to evaporation or consumption of lighter parts.

Findings of the board also verified the claim that ethylized gasoline prevents detonation in the engine. None of the engines at any time showed any evidence of a knock. As the result of lubrication in accordance with standard recommendations, contest officials reported all mechanical parts outside the motors had functioned perfectly and without distinguishable wear. On pistons and cylinders the wear was too small to be measured at 1,000-mile intervals and was less than one one-thousandth of an inch for the entire 9,000 miles.

CONSIDERABLE REFINERY CONSTRUCTION ON WAY

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marks the company's entrance to the refining industry.

The Republic Oil Refining Co. of Pittsburgh, Pa., also is a marketing company. The plant at Texas City is being built primarily to provide a source of refinery product supply for its eastern market and will operate on Big Lake oil, the company being affiliated indirectly with the Big Lake Oil Co., a Benedum-Trees interest.

Deepwater Oil Refineries, Inc., on the ship channel, has just put in operation a new pipe still and bubble tower with additional auxiliary equipment which will materially increase the capacity of the plant, formerly rated at 5,000 bbls. daily. Crown Central Petroleum Corp., also on the channel, will start work in the near future on a building program with a view to enlarging the capacity of the plant following recent expansion of the company in the marketing business.

Although classed among the larger companies, Sinclair Refining Co. also has under way a new extensive expansion program involving the expenditure of over $1,000,000 in new equipment and storage. This company for some time has been steadily adding to its Houston plant.

Most of the work now under way at other large companies is confined chiefly to completing construction started sometime ago or in routine replacements and additions.

Rumors have been circulated freely that the Houston Oil Co. is to enlarge its plant at Viola (Corpus Christi) but these have been denied consistently by company officials. However, additional facilities have been provided and new tanks are being built. The plant, which has a capacity of 1,000 bbls. daily, was built a year ago primarily to top gasoline for local distribution in that territory.

NEARLY ALL STRIPPER WELLS ARE CARED FOR

(Continued from Page 32)

and it is connecting to those leases left without outlet without receiving in return relief for other oils contracted from other leases. In other words, the new connections the National Refining Co. is making adds to its total runs.

In addition to the oil listed above on the exchange program the Texas Pipe Line Co. has relieved about 137 leases, taking about 1,181 bbls. of oil daily by laying approximately 42¼ miles of pipe and installing 67 pumps. These lines serve leases in Okmulgee, Creek and Tulsa Counties.

By agreement between the Gulf Pipe Line Co. and the Texas Pipe Line Co., the Gypsy Oil Co. and The Texas Company have divided the purchase of practically all distress oil in the Glenn Pool. This was accomplished by each company accepting the oil produced in that portion of the field where it can best serve the leases because of its existing lines, as well as by a system of exchange whereby one company's oil is run by the other company's pipe line where such an arrangement facilitates handling production.

The Barnsdall company has taken over 310 bbls. of oil without exchange of oil with other purchasers and had made arrangements to run a large part of this oil before the Oklahoma stripper well committee started to function. In making these connections the producer furnished the pipe and the Barnsdall company the labor and in this way the expense of the new lines was held to a minimum.

Physical Property Loaned

By direct negotiation with the purchasers of crude oil having pipe lines near their properties, and by the exchange of oil between purchasers as outlined above, a large part of the distress oil was given outlet to the market.

However, there were still other properties without connection that could be best served by purchasers, other than the Prairie Oil & Gas Co., if the lines of the Prairie Pipe Line Co. could be used to convey the oil from the leases to the pipe lines of these other companies.

Examination of the map referred to above showed where these gathering systems crossed or were close to one another. Where the oil could best be handled by some other pipe line company taking over the lines and equipment of the Prairie Pipe Line Co. it was arranged to do so.

An inventory of all equipment involved in the transaction was made by the Prairie Pipe Line Co. and checked by the other company and a contract was then drawn transferring the use of this equipment to the other pipe line for a rental fee of $1 per year for each contract.

In many cases it was found that securing the use of Prairie Pipe Line Co. lines under these contracts would permit the other purchasing company to extend its lines to other nearby leases needing an outlet for their oil and a good many barrels of distress oil was relieved in that way.

To make the actual connections it was general practice to cut both pipe lines where they crossed and by the use of fittings or welded connections join one line to the other so that they became part of one system, with the least outlay of money or material.

The Prairie Oil & Gas Co. will be paid by one check for all oil run each month by the other purchasers on a 100 per cent division order, but it, in turn, will pay the royalty. On the 600 properties from which the Prairie Oil & Gas Co. is accepting oil it has agreed to take care of all disbursements for oil purchased, this entailing a heavy overhead expense in clerical work.

These arrangements are to continue as long as the other purchasers continue to buy the oil offered by the Prairie Oil & Gas Co.

In addition to these arrangements, the Stanolind Pipe Line Co. has connected to many wells in Nowata County as described in an article in The Oil and Gas Journal of April 9, Page 25.

The Human Side

Why did the big oil companies go to the relief of the owners of those thousands of stripper wells? It was not the need of the oil. They could not hope to make any appreciable amount out of the transaction. The answer is that the officials of the big companies felt that they owed it to the owners of the little wells to keep the properties alive and to permit them to produce to their economic limit. Many of the owners were old and valued friends of high officials of the large oil corporations. Many of them had worked together in earlier years and made lasting friendships.

Some of the leases had been purchased by old oil field workers with the savings of a few thousand dollars gathered together while working as drillers, lease bosses, pipe line men and so forth. They were living upon or near the leases and doing their own lease work, and perhaps a little farming as a side line.

When their wells were cut off from outlet they were faced with a serious problem and knowing men with the larger producing and purchasing companies their first thought was to appeal to them for relief.

The members of the Oklahoma stripper well committee report that the spirit of co-operation shown by practically all purchasers of crude oil in the district affected was most commendable and while their services were given without compensation of any kind, and in many cases they were actually out of pocket for personal expenses, they feel that much has been accomplished in keeping these old properties on the rolls of active producers and aiding the communities in which they are located by continuing this source of income to both the property owners and the workers.

BOTTOM HOLE CHOKE CUTS GAS-OIL RATIO

(Continued from Page 64)

the lowering of delivery pressures obtained by choking at or near the sand will produce better and safer operating conditions. Bottom hole choking does not to a great extent vary velocity through the sand for any given rate of production as compared to sand velocities obtained through surface choking for that same rate of production—consequently wells which have a high gas-oil ratio due to sand velocity will still have a comparatively high ratio after bottom hole choking is put into use, although the more intimate mixture of oil and gas obtained by choking at the bottom and the more efficient tubing velocities obtained through the control afforded by combined bottom holes and surface choking should effect material reductions in these ratios. Head wells in which the available gas is either too limited or under too low pressure cannot always be brought back to steady flow. However, while the tests being conducted have not been in progress long enough to definitely prove or disprove all of the advantages that it is hoped to obtain, the results which have been obtained so far indicate that it is safe to make the statement that good operating in the near future will include bottom hole choking.

EAST CENTRAL TEXAS WILDCATS

(Continued from Page 59)

Arkansas Fuel Oil Co.'s No. 1 Vonie Calvin, 300 ft. from S and 300 ft. from W of 61-ac. lease and 119-ac. tract, Henry Hathaway Sur. ..... Drlg. 2,700 ft.

P. P. Ash et al's No. 1 A. H. Tubbs, 1,550 ft. from S and 4,120 ft. from E of survey, Dolores Sanches Sur. ..... Derrick.

Badgett and Ward's No. 1 Sample, 665 ft. S and 185 ft. W of SW cor. of A. Z. Jeffrey 29.5 acres, W. P. Chisum Sur. ..... Rigging up.

Barnsdall Oil Co.'s No. 1 J. G. McGrede, 1,650 ft. from N and 2,000 ft. from W of tract, Dolores Sanches Sur. ..... Derrick.

Branson et al's No. 1 J. J. Fuller, 1,050 ft. from N and 170 ft. from W of survey, M. Alexander Sur. .. Derrick.

Ball et al's No. 1 L. D. Campbell, 540 ft. from N and 219 ft. from E of 72½-ac. tract, David Ferguson Sur. ..... Derrick.

Barnsdall Refining Co.'s No. 1 J. McGrede, 150 ft. from E and 150 ft. from S of 100-ac. lease and W offset to Pilot Oil Co.'s No. 1 McGrede, Dolores Sanches Sur. ..... Sand 3,623-54 ft.; T. D. 3,656 ft.

Bell & Graddy's No. 1 M. George (or Daniels), 225 ft. S and 650 ft. W of 26-ac. tract, Mary Van Winkle Sur. ..... Skidded 50 ft. east and rig up.

Blackstock et al's No. 1 F. E. McGrede, 150 ft. from E and 150 ft. from S of 36-ac. tract and 10-ac. tract, Dolores Sanches Sur. ..... Set 6⅝-in. csg.; T. D. 3,675 ft.

B. L. Brookin's No. 1 J. M. Tuttle, 150 ft. from N and 305 ft. from E of 12½-ac. lease, William H. Castleberry Sur. ..... Rig up.

Callahan, Thompson et al's No. 1 Fenn, 463 ft. from N and 150 ft. from E, 778 ft. from S of 44.5-ac. tract, David Ferguson Sur. ..... Derrick.

Campbell et al's No. 1 G. M. Collins, 160 ft. from E and 160 ft. from S of 84-ac. tract, G. W. Hooper Sur. ..... Top Pecan Gap 2,413 ft.; coring 2,475 ft.

Cranfill & Reynolds' No. 1 Clayton heirs, 330 ft. from W of 20-ac. lease, L. B. Outlaw Sur. ..... Set 45 ft. 10-in. csg.

Cranfill & Reynolds' No. 1 A. D. Porter, 330 ft. from E and 330 ft. from S of 100-ac. tract, G. W. Hooper Sur. ..... Derrick.

Cranfill & Reynolds' No. 1 Susan Scott, 350 ft. from N and 250 ft. from E of survey, David Dainwood Sur. ..... Set 79 ft. 12½-in. csg.

Corley and Blair's No. 1 W. E. Bumpers, 150 ft. from E and 150 ft. from S of 10-ac. lease and 20-ac. tract, William H. Castleberry Sur. ..... Sand 3,550-64 ft.; set csg.

Tom David et al's No. 1 W. S. Pryor, 200 ft. from S and 200 ft. from W of 152-ac. tract, 2,600 ft. from S and 2,350 ft. from N of survey, Hamilton McNutt Sur. ..... Derrick.

Davis and Russell's No. 1 M. E. Anderson, 150 ft. from E and 75 ft. from S of 3-ac. lease in Kilgore Townsite, Mary Van Winkle Sur. ..... Coring 3,517 ft.

Charles Davidson et al's No. 1 Paul Jones, 7,000 ft. from most southerly N line and 3,600 ft. from W, W. P. Chisum Sur. ..... Derrick.

Daisy Oil Co.'s No. 1 Mrs. H. B. Ware, 1,000 varas from N and 350 ft. from W of survey, Avery B. Johnson Sur. ..... Drlg. 3,250 ft.

Delaney et al's No. 1 Homer Clemens, 396 ft. from N and 356 ft. from W of 22½-ac. tract, Dolores Sanches Sur. ..... Top sand 3,656 ft.; set 6⅝-in. csg.; T. D. 3,669 ft.

Sultan & Daniels et al's No. 1 B. Duncan, 420 ft. from N and 514 ft. from E of 28-ac. tract, G. F. Penn Sur. ..... Rig up.

Harry Elliott et al's No. 1 Woodley Jones, 2,125 ft. from N line and 3,720 ft. from E line of William H. Castleberry Sur. ..... Shut down 410 ft.

E. A. Eslick et al's No. 2 Springhill Church, 150 ft. from E and 150 ft. from S of 15-ac. lease, W. offset to Mid-Kansas, Dolores Sanches Sur. ..... Set liner to run tubing; T. D. 3,606 ft.

Harry Elliott's No. 1 McNeely, 150 ft. from N and 150 ft. from E of 7.73-ac. tract, W. P. Chisum Sur. .... Drlg. 1,710 ft.

Empire Oil & Refining Co.'s No. 1 Otto Lockhart, 150 ft. from E and 150 ft. from S of 75-ac. lease, F. W. Warraner Sur. ..... Moving in.

Flannagan Prod. Co.'s No. 1 A. J. Green, 200 ft. from E and 150 ft. from S of 35-ac. tract, G. W. Hooper Sur. ..... Sand 3,569-96 ft.; T. D. 3,596 ft.

Flannery & Bradley's No. 1 W. H. York, 150 ft. from S and center E and W of 18½-ac. tract, William Carlton Sur. ..... Set 6⅝-in. csg. 3,496 ft.; T. D. 3,583 ft.

Merren & Hays' No. 1 Hawkins, 160 ft. W of S line of Hawkins 325-ac. from SE cor. of same, thence 160 ft. at right angles, W. P. Chisum Sur. ..... Drlg. 2,612 ft.

Gulf Production Co.'s No. 1 M. O. Shepherd, 728 ft. from N and 330 ft. from W of 38-ac. lease, George R. Rains Sur. ..... Drlg. 1,150 ft.

Gulf Production Co.'s No. 1 Mary Chavles, 4,150 ft. from E line of survey and 2,100 ft. from N of county line, W. P. Chisum Sur. ..... Top Pecan Gap 2,575 ft.; coring 2,950 ft.

Gulf Production Co.'s No. 1 L. S. Fishburn, 330 ft. N and 330 ft. W of NE cor., W. C. Alvice Sur., Francis W. Johnson Sur. ..... Top sand 3,554 ft.; top Pecan Gap 2,420 ft.; base Pecan Gap 2,932 ft.

Gulf Production Co.'s No. 1 Muckelroy, 330 ft. from W line and 4,700 ft. from S line of survey, J. S. Carrithers Sur. ..... Top sand 3,560 ft.; top Pecan Gap 2,523-2,932 ft.

Gulf Production Co.'s No. 1 Della Crim, 1,150 ft. from S of survey and 5,350 ft. N of county line ..... Coring 3,554 ft.

Gulf Production Co.'s No. 1 Spear, 150 ft. out of NE cor. of survey, W. P. Chisum Sur. ..... Top sand 3,630 ft.; base Pecan Gap 3,025 ft.

Gulf Production Co.'s No. 2 A. Spear, 330 ft. from W and 3,900 ft. from N of survey, Mary Van Winkle Sur. ..... Top sand 3,523 ft.; base Pecan Gap 2,950 ft.

Harper Petroleum Corp.'s No. 1 Woodley Jones, 2,000 ft. from N line and 3,900 ft. from E line of William H. Castleberry Sur. ..... Derrick.

O. L. Heckman's No. 1 C. H. Moore, 450 ft. W and 150 ft. N of NE cor. of E. M. Woods 39.3-ac. tract, Martha Dillard Sur. ..... Drlg. 1,306 ft.

Hawkeye Pet. Co.'s No. 1 R. S. and J. C. McKinley, 250 ft. from S and 150 ft. from W of survey, Dolores Sanches Sur. ..... Drlg. 2,760 ft.

Heydrick et al's No. 1 Lynie McGrede, 1,000 ft. from N and 330 ft. from E of McGrede 187 acres, Dolores Sanches Sur. ..... Sand 3,619-40 ft.

Howard and Russell's No. 1 Stone, 150 ft. from N and 150 ft. from E of 100-ac. tract, Bailey Anderson Sur. ..... Derrick.

Heep Oil Co.'s No. 1 S. B. Hall, 150 ft. from E and 150 ft. from S of lease and survey, David Dainwood Sur. ..... Rig up.

Humble Oil & Refining Co.'s No. 1 J. A. Knowles, 4,150 ft. from W line and 4,150 ft. from S line of survey, Mary Van Winkle Sur. ..... Drlg. 3,520 ft.

Humble Oil & Ref. Co.'s No. 1 T. M. Armstrong, 1,353 ft. from N and 150 ft. from E of 603-ac. tract, Lewis J. Rigsby Sur. ..... Top sand 3,566 ft.; base Pecan Gap 2,887 ft.; T. D. 3,586 ft.

Humble Oil & Ref. Co.'s No. 1 A. Carter, 780 ft. from S and 150 ft. from W of 92-ac. tract, David Ferguson Sur. ..... Drlg. 2,774 ft.

Humble Oil & Ref. Co.'s No. 1 D. C. Johnson, 2,165 ft. from S and 150 ft. from W of 62.5-ac. tract and survey, John R. Crosby Sur. ..... Sand 3,599-3,612 ft.; set csg.

Humble Oil & Ref. Co.'s No. 1 H. M. Lawrence, 540 ft. from N and 210 ft. from W of 100-ac. tract, David Ferguson Sur. ..... Moving in material.

Hurburt and Brown's No. 1 L. L. Mackey, 990 ft. from S and 990 ft. from S of 269-ac. tract, 1,000 ft. from W and 990 ft. from S of survey, G. Y. Chambers Sur. ..... Fishing 2,770 ft.

K. B. Oil Co.'s No. 1 Dickson, 150 ft. from S and 150 ft. from W of 5-ac. lease, Mary Van Winkle Sur. ..... Derrick.

H. P. Key's No. 1 King, 150 ft. out of SE cor. of 48-ac. tract, W. P. Chisum Sur. ..... Drlg. 2,711 ft.

Kimsey-Trimble's No. 1 Griffith Davis, 922 ft. E of N line of Griffith Davis 119.5-ac. tract from NW cor. of same and 145 ft. S at right angles, W. P. Chisum Sur. ..... Shut down 1,050 ft.

Lacey et al's No. 1 T. D. Anderson et al, 150 ft. from S and 150 ft. from W of 13-ac. tract, G. W. Hooper Sur. ..... Shut down 1,385 ft.

J. K. Livingston Oil Co.'s No. 1 D. C. Johnson, 200 ft. from N and 150 ft. from E of survey, Martha Dillard Sur. ..... Derrick.

Magnolia Petroleum Co.'s No. 1 Clem Jones, 150 ft. from E and 150 ft. from S of 65-ac. tract, G. W. Hooper Sur. ..... Material on ground.

Magnolia Petroleum Co.'s No. 1 Jessie King, 7,000 ft. from most southern N line and 3,300 ft. from W. W. P. Chisum Sur. ..... Building derrick.

Magnolia Petroleum Co.'s No. 1 W. B. Goyne, 150 ft. from S and 150 ft. from W of 31.7-ac. tract, J. T. McDaniel Sur. ..... Derrick.

Magnolia Petroleum Co.'s No. 1 Hughey, 330 ft. from N and 330 ft. from W of 80-ac. lease, William McCurry Sur. ..... Drlg. 850 ft.

Meek and King's No. 1 Harmony Grove School, 270 ft. from S and 150 ft. from W of 3.7-ac. tract, Mowry Irwin Sur. ..... Shut down 1,600 ft.

Mid-Kansas Oil & Gas Co.'s No. 2 Barton, 685 ft. S along W line and Hollingsworth survey, from NE cor. W. P. Chisum Sur., thence 150 ft. at right angles, S. P. Hollingsworth Sur. ..... Derrick.

Mid-Kansas Oil & Gas Co.'s No. 1 Durham, 150 ft. from N and 150 ft. from E, W. P. Chisum Sur. .... Drlg. 1,780 ft.

Mid-Kansas Oil & Gas Co.'s No. 1 Hughey, 150 ft. from N and 150 ft. from W of tract and survey, James Hillard Sur. ..... Drlg. 1,800 ft.

Mid-Kansas Oil & Gas Co.'s No. 1 E. M. Nettleton, 150 ft. from S and N offset to Republic's No. 1 Fisher, John Ruddle Sur. ..... Set 6⅝-in. csg. 3,452 ft.

Owens et al's No. 1 C. E. Davis, 200 ft. from N and 340 ft. from E of 37-ac. tract and 18.3-ac. lease, William H. Castleberry Sur. ..... Drlg. 1,800 ft.

Pilot Oil Co.'s No. 1 Maggie Magrill, 125 ft. N and 230 ft. W of most southern SW cor. of Ike Denson tract, Dolores Sanches Sur. ..... Set 6⅝-in. csg. 3,620 ft.

Pace et al's No. 1 C. Harrell estate, 500 ft. from E line and 150 ft. from N line of 150-ac. tract, A. M. Coleman Sur. ..... Drlg. 3,300 ft.

Phillips et al's No. 1 M. T. Cole, 200 ft. out of SW cor. of M. T. Cole 320-ac. tract, Judson Meador Sur. ..... Shut down 1,700 ft.

Prairie Oil & Gas Co.'s No. 1 Elder, 800 ft. from N and 800 ft. from E lines of survey, William McCurry Sur. ..... Drlg. 2,620 ft.

Refugio Oil Corp.'s No. 1 Barber, 150 ft. from N line and halfway between E and W line of lease, Warraner Sur. ..... Top sand 3,460 ft.; coring 3,466 ft.

Rex Drlg. Co.'s No. 1 J. H. and W. E. McHaney, 350 ft. from E and 250 ft. from S of 80-ac. tract, Henry Hathaway Sur. ..... Drlg. 2,648 ft.

Ross et al's No. 1, located on Findley & Thomas 50-ac. tract, 150 ft. from S line of 6.66-ac. lease, C. H. Alexander Sur. ..... Derrick.

Roy Roberts et al's No. 1 L. M. Colburn, 150 ft. from E and 150 ft. from S of 45-ac. lease, 5,700 ft. from E and 850 ft. from N of survey, Henry Hathaway Sur. ..... Derrick.

C. Rosenfield et al's No. 1 J. A. Knowles, 700 ft. from E, 1,250 ft. from N, William Lyles Sur. ..... Shut down 2,732 ft.

Rush Bros. et al" No. 1 Arthur Christian, 225 ft. S and 170 ft. E of SE cor. of Randle Christian 32-ac. tract, G. W. Hooper Sur. ..... Drlg. 2,720 ft.

Sabine Oil & Gas Co.'s No. 1 Harris, 3,500 ft. E and 3,500 ft. N of NE cor. of S. Lewis Sur., Mary Van Winkle Sur. ..... Derrick.

Seigler and McCall's No. 1 Missie Young, 330 ft. from N and 330 ft. from W of tract and survey, Carl Rhodes Sur. ..... Moving in rig.

Selby Oil & Gas Co.'s No. 1 H. R. Snavely, 325 ft. from E and 250 ft. from S of survey, John R. Crosby Sur. ..... Waiting on csg.

Shell Petroleum Corp.'s No. 1 G. W. Richey, 150 ft. from E and 150 ft. from S of 60-ac. tract, William Carlton Sur. ..... Derrick.

Shell Petroleum Corp.'s No. 2 J. A. Knowles, 150 ft. from E and 400 ft. from S of survey, Allen Norris Sur. ..... Rig up.

Sinclair Oil & Gas Co.'s No. 1 Mathie Moncrief, 840 ft. from N and 168 ft. from W of 56-ac. tract, 657 ft. N of road, W. H. Castleberry Sur. ..... Top Pecan Gap 2,520 ft.; base Pecan Gap 2,945 ft.; top sand 3,564 ft.; T. D. 3,568 ft.

Smith et al's No. 1 J. B. Doby, 982 ft. from E and 150 ft. from S of 170-ac. tract, William H. Castleberry Sur. ..... Spudded and shut down.

E. L. Smith's No. 1 Cole, 893 varas S along E line of Samuel Brooks Sur. from NE cor. of same, thence 107 varas E at right angles, J. Meador Sur. ..... Moving in.

Smitherman and Greer's No. 1 George Jones et al, 330 ft. from S and 359 ft. W of 100-ac. tract and 50-ac. lease, G. W. Hooper Sur. ..... Top sand 3,548 ft.; set csg.

Sinclair Oil & Gas Co.'s No. 1 M. T. Cole, 2,640 ft. from N and 2,742.2 ft. from W line of survey, Samuel Brooks Sur. ..... Fire shot out; preparing to shut in.

Smith Ref. Co.'s No. 1 J. A. Knowles, 150 ft. from S, 150 ft. from NW of 75-ac. tract, 5,200 ft. from W, 7,700 ft. from N, Mary Van Winkle Sur. ..... Derrick.

Sun Oil Co.'s No. 2 J. R. Beal, 192 ft. from N and 250 ft. from E line of lease, W. P. Chisum Sur. .... Coring 3,439 ft.

Sun Oil Co.'s No. 1 G. W. Tate, 250 ft. from N and 250 ft. from E of 64-ac. lease and tract, William H. Castleberry Sur. ..... Straightening hole.

Stanolind and Simms Oil Co.'s No. 1 J. J. Flewellen, 353 ft. from N and 950 ft. from E of 200-ac. lease and 987-ac. tract, Marshall Mann Sur. ..... Rig up.

C. S. Thomas et al's No. 1 C. B. Everett, 300 ft. from N and 200 ft. from E of 30.25-ac. tract, John Ruddle Sur. ..... Drlg. 60 ft.

J. Thomas Cox et al's No. 1 Finley and Thomas, 150 ft. from N line and 150 ft. from W line of 3½-ac. lease and 50-ac. tract, Charles B. Alexander Sur. .... Derrick.

The Texas Company's No. 1 W. Baxter, 150 ft. from E and 150 ft. from S of lease, Mary Scott Sur. .... Rigging up.

Texas Pacific Coal & Oil Co.'s No. 1 fee, 330 ft. from S and 330 ft. from W tract and survey, George Hampton Sur. ..... Oil sand 3,565-81 ft.

Paul Vitek et al's No. 1 Louise Osborne, 150 ft. from E, 150 ft. from S and W 46 acres of 84-ac. tract, 2,000 ft. from W, 450 ft. from S. R. R. Bobbett Sur. .... Drlg. 3,700 ft.

Valentine Oil Co.'s No. 1 Goyne-Hughey, 6,100 ft. from S and 6,800 ft. from W of survey, Mary Van Winkle Sur. ..... Derrick.

Walker and Harrison's No. 1 E. L. Walker, 1,025 ft. from N and 550 ft. from W of survey, Martha Dillard Sur. ..... Drlg. 2,560 ft.

Wise and Jackson's No. 1 F. J. Glover, 350 ft. from N and 125 ft. from E line of survey, George Melton Sur. ..... Moving in.

H. M. Wages et al's No. 1 Finley and Thomas, 165 ft. from E and 150 ft. from S of 10-ac. lease, Charles H. Alexander Sur. ..... Rig up.

Wise and Jackson's No. 1 Wash Dickey, 330 ft. from S and 200 ft. from E of survey, W. H. Johnson Sur. ..... Testing; top sand 3,692 ft.

Yount Lee Oil Co.'s No. 1-B R. S. McKinley, 1,993 ft. from S and 2,440 ft. W of NE cor. of 212-ac. tract, William Robinson Sur. ..... Drlg. 2,665 ft.

Yount Lee Oil Co.'s No. 1 Isaac Denson, 369 ft. from S and 684 ft. from W of 64-ac. tract, Dolores Sanches Sur. ..... Set 6⅝-in. csg.; T. D. 3,657 ft.

Yount Lee Oil Co.'s No. 1 C. E. Fenton, 619 ft. from E line and 742 ft. from S line of 84-ac. tract, Dolores Sanches Sur. ..... Drlg. 3,579 ft.

Yount Lee Oil Co.'s No. 1 Bun Rodden, 610 ft. from N and 215 ft. from W of 22-ac. tract, William Robinson Sur. ..... Top Pecan Gap 2,396 ft.; set csg.; T. D. 3,581 ft.

Yount Lee Oil Co.'s No. 1 Thrasher and Stuckey, 309 ft. from N line and 331 ft. from E line of 80-ac. lease, G. W. Hooper Sur. ..... Derrick.

HENDERSON COUNTY

Arcadia Refining Co.'s No. 1 J. M. Dean, 150 ft. from S and 150 ft. from W of 42.75-ac. tract, Simon Boone heirs Sur. ..... Drlg. 200 ft.

Westside Investment Co.'s No. 1 Thornhill, 450 varas from W and 400 varas from N line of survey, James Spivey heirs Sur. ..... Location.

LAMAR COUNTY

K. O. Bundy et al's No. 1 La Gatle, 200 ft. from N and 500 ft from E of La Gatle tract, John V. Cherry Sur. ..... Moving in rig.

Everett & Allen's No. 1 Guest, 250 ft. S and 2,046 ft. E of 100-ac. tract, L. Roberts Sur. ..... T. D. 2,700 ft.; cored sand 2,696-2,700 ft.

MORRIS COUNTY

Dumas et al's No. 1 Tom Ball, 1,046 ft. from E and 248 ft. from S of 71-ac. tract, A. S. Young heirs Sur. ..... Derrick.

NACOGDOCHES COUNTY

Bunte et al's No. 1 A. F. Boatman, 330 ft. from S and 150 ft. from W of 67-ac. tract, William A. Moore Sur. ..... Drlg. 940 ft.

E. L. Chapman's No. 1 Tillford Hunt, 1,250 varas from S line and 1,468 varas from W line of survey, Stephen Strode Sur. ..... Shut down 3,300 ft.

Foreman and Weller's No. 1 W. Smith, 60 ft. NW of S line and 420 ft. S of road in 73.5-ac. tract, Hossea Y. Barbo Sur. ..... Derrick pattern.

Fuhram et al's No. 1 Robert Mattaner, NW cor. of 520-ac. tract, J. A. Cherino grant ..... Rig up.
Joiner and Henson's No. 1 Andy Legg, 330 ft. from N and 330 ft. from W of tract, John Durst Sur. .... Waiting on csg. 450 ft.
Joiner et al's No. 1 Reeves, 450 ft. from S and 350 ft. from W of survey, T. G. Loyd Sur. ..... Rigging up.
J. C. McNeil et al's No. 1 Hayter estate, 1,000 ft. E of Laco Creek and 300 ft. S of Nacogdoches and Jacksonville Highway De Las Santos-Coy Sur. .... Waiting on csg.

RAINS COUNTY

Berry and Hale's No. 1 Ownsby, 150 ft. N and 1,100 ft. from E of most easterly SE cor. of survey, Alexander Sur. ..... Set surface pipe 130 ft.
Westbrook Oil Co.'s No. 1 William Cates, 150 ft. N and W of NW cor. of E. S. Knight 46-ac. tract and on Cates 266-ac. tract, Calvin Gage Sur. ..... Drlg. 4,213 ft.

RED RIVER COUNTY

J. R. Sarland's No. 1 Bryan, 1,200 ft. SW of NE cor. of Bryan 130 acres, P. Vaughn Sur. ..... Derrick up.
Everett & Allen's No. 1 E. Howison, 225 ft. S, 185 ft. W of 79-ac. tract, William Humphreys Sur. ..... Shut down 1,800 ft.; pulled in rig.
Droppleman and Bunely's No. 1 J. W. Cunningham, 250 ft. E and 250 ft. S of 180-ac. tract, S. B. Shi Sur. .. Moving in larger rig.
Pearsons et al's No. 1 J. R. Dellahunty, 500 ft. from N of Isaac Moore Sur. and 200 ft. E of E line of Robert Glass Sur. ..... Shut down 330 ft.

KILGORE AREA—RUSK COUNTY

Burton Drlg. Co.'s No. 3 E. B. S. Florey, 250 ft. out of NE cor. of Burton Florey 50-ac. lease, Peter Holmes Sur. ..... Location.
Blackwell Oil & Gas Co.'s No. 1 Moore, 4,050 ft. from W and 4,450 ft. from N of survey ..... Derrick.
Calloway et al's No. 1 Harmon, 1,800 ft. from E and 5,525 ft. from N of survey, F. Cordova Sur. ..... Rig up.
Cox and Hamon's No. 2 D. M. Peterson, 150 ft. from N and W lines of 40-ac. tract, Isaac Ruddle Sur. .... Moving in material.
Cromwell et al's No. 1 C. J. Bradberry, 565 ft. from S line of Bradberry 112-ac. tract and 164 ft. from E line of Robert W. Smith Sur. ..... Top sand 3,580 ft.; drlg. plug; T. D. 3,700 ft.
Tidal Oil Co.'s No. 1 J. S. Bean, 1,650 ft. from S, 200 ft. E of NW cor. of 314-ac. tract and lease, 4,925 ft. from S, 1,075 ft. from W. J. Lewis Sur. .... Drlg. 3,528 ft.
East Texas Refining Co.'s No. 2 Wills, 200 ft. from N and 150 ft. from E of 80-ac. lease, W. P. Chisum Sur. ..... Cementing back.
Harry Elliott's No. 1 Carroll, 175 ft. from N and 200 ft. from E of 7-ac. tract, W. R. Cook Sur. ..... Location.
Elsy Drlg. Co.'s No. 1 George Thompson, 150 ft. from N, 150 ft. from E of tract of 70 acres and 10-ac. lease, 400 ft. S, 500 ft. W, Henry Dobson Sur. ..... Shut down 2,900 ft.
Gulf Production Co.'s No. 1 Russell, 150 ft. from the N and W lines of the S. R. W. Smith Sur. ..... Drlg. 2,587 ft.
Heep Oil Co.'s No. 1 Givens, 1,200 ft. from E and 210 ft. from S of survey, Robert W. Smith Sur. ..... Drlg. 3,577 ft.
Lewis and Perkins' No. 1 Brock heirs, 150 ft. from the N and E lines of the R. W. Smith Sur. ..... Top sand 3,634 ft.; T. D. 3,650 ft.
C. H. Lyon's No. 1 Ladd, 177 ft. from N and 177 ft. from W of 2-ac. tract, Henry Hobson Sur. ..... Spudding.
Magnolia Petroleum Co.'s No. 1 Bradley, 150 ft. from the S and E lines of the lease in the N Robert W. Smith Sur. ..... Top sand 3,684 ft.; set csg.
Magnolia Petroleum Co.'s No. 1 Florey, 150 ft. from N and E lines of tract, Peter Holmes Sur. ..... Pinched to 6 bbls.; making less than 1 per cent water.
Moser's No. 1 Buntyn, 554 ft. from N and 325 ft. from E of survey, the most northeasterly cor. of survey, J. C. Snow Sur. ..... Spudded; shut down.
Rector and Davis' No. 1 Brightwell, 2,300 ft. from S line and 225 ft. from W line of survey, Robert E. Winn Sur. ..... Drlg. 2,863 ft.
Republic Production Co.'s No. 1 Bean, 1,150 ft. from the N and 50 ft. from the W lines of the J. Lewis Sur. ..... Top sand 3,578 ft.; set csg.
Republic Production Co.'s No. 1 Christian, 1,850 ft. from the N and 920 ft. from the W lines of the N. Robert W. Smith Sur. ..... Drlg. 3,519 ft.
Sun Oil Co.'s No. 1 Ed Barker, 200 ft. from E and 200 ft. from S of 77-ac. lease, A. M. Ryan Sur. .... Swabbing.
Sun Oil Co.'s No. 1 Beal, 200 ft. from W and 200 ft. from S of Beal 180-ac. tract, W. P. Chisum Sur. .... Top sand 3,614 ft.; T. D. 3,625 ft.
Sun Oil Co.'s No. 1 A. A. King, 225 ft. out of SE cor. of A. A. King 100-ac. tract, Peter Holmes Sur. .... Location.
Stanolind Oil & Gas Co.'s No. 1 W. R. Terrell, 327 ft. S and 275 ft. from W of 50-ac. lease, E. G. Sevier Sur. ..... T. D. 3,712 ft.
Stanolind Oil & Gas Co.'s No. 1 O'Quinn, 3,050 ft. from W and 1,900 ft. from S of survey, George Berry Sur. ..... Derrick.
Stanolind Oil & Gas Co.'s No. 1 Beal, 300 ft. from the S and W lines of the lease, W. P. Chisum Sur. .... Derrick.
Stanolind Oil & Gas Co.'s No. 1 J. S. Powers, 330 ft. from the N and E lines of the John Womack Sur. ..... Top sand 3,674 ft.; T. D. 3,678 ft.
Texas Pacific Coal & Oil Co.'s No. 1 C. O. Christian, 330 ft. out of NW cor. of lease, Meredith McCabe Sur. ..... Drlg. 3,100 ft.
Weaver-Crim Corp.'s No. 1 Dave Ladd, 150 ft. from the S and W lines of tract, N offset to Woodley's No. 1 Ladd, Henry Robson Sur. ..... Testing 3,665 ft.

JOINER POOL—RUSK COUNTY

Arkansas Fuel Oil Co.'s No. 1 John Whelis, 200 ft. from N and E lines of Whelis tract in R. H. Pinney Sur. ..... Set 6-in. csg. 3,621 ft.; T. D. 3,752 ft.
Alford et al's No. 1 W. L. Thrash, 1,103 ft. from N, 420 ft. from E of SE cor., B. Smith Sur. ..... Derrick.
Armstring and Pitt's No. 1 Cooper, 2,150 ft. from W and 166 ft. from N of survey ..... Drlg. 2,125 ft.
Armstrong's No. 1 Alford, 151 ft. from S and 1,080 ft. from W of survey, T. J. Moore Sur. ..... Derrick.
Bass et al's No. 1 Alford, 1,760 ft. from E and 5,260 ft. from N of survey, F. Cordova Sur. ..... Drlg. 2,700 ft.
Big Indian Oil Co.'s No. 1 Deason, 360 ft. from E and 4,100 ft. from S of survey, M. J. Prue Sur. ..... Set 10-in. csg. 232 ft.
Berry-Lewis' No. 1 Thompson, 291 ft. from N and 2,955 ft. from W of M. L. Thompson 129 acres, M. J. Prue Sur. ..... Shut down 1,320 ft.
Campbell Oil Co.'s No. 1 Compton, 600 ft. from N and W line of Simon Del Rio Sur., 1½ miles NW of Minden ..... Derrick.
Cochran and Smith's No. 1 J. P. Cansler, 150 ft. from S and 1,025 ft. from W of 38.5-ac. tract, E. Collard Sur. ..... Drlg. 1,400 ft.
Consolidated Oil Co.'s No. 3 Jobe, 4,500 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ..... T. D. 3,685 ft.
Consolidated Oil Co.'s No. 4 Jobe, 5,025 ft. from W and 3,160 ft. from N of survey, Juan Ximenes Sur. ..... Swabbed dry through csg.
E. L. Chapman's No. 1 A. P. Finney, 150 ft. from W of E 20 acres of 102-ac. tract, Isaac G. Parker Sur. .. Shut down 3,606 ft. in sand.
F. L. Coogan's No. 1 Florence, 4,480 ft. from W and 4,050 ft. from S of survey, F. Cordova Sur. ..... Derrick.
R. H. Deering & Son's No. 1 T. H. Goforth, 150 ft. from S and 150 ft. from W of 22-ac. lease and 62-ac. tract, J. Lindly Sur. ..... Drlg. 1,300 ft.
Droppleman Development Co.'s No. 1 Cox, 384 ft. from N and 330 ft. from W of 20-ac. lease or survey, John Darley Sur. ..... Location.
Crabtree's No. 1 Giles, 1,000 ft. from N and 150 ft. from E lines of Giles 90 acres in M. J. Prue Sur. .. Sand 3,678-3,705 ft.; coring.
Dan Dillon et al's No. 1 W. H. Frederick (Jake), 150 ft. from E, 150 ft. from S of 50-ac. tract, Juan Ximenes Sur. ..... Derrick.
Danciger's No. 1 Deason, 3,925 ft. from S and 650 ft. from W of survey, Juan Ximenes Sur. ..... Swabbed through tubing; dry.
Devonian Oil Co.'s No. 1 Milstead, 200 ft. from S and E lines of J. B. Milstead 90.4-ac. tract in R. H. Pinney Sur. ..... Set 6-in. csg.; T. D. 3,631 ft.
Elliott's No. 1 Alford, 445 ft. N and 194 ft. W of most westerly SW cor. of J. P. Maxwell 144-ac. tract, I. G. Parker Sur. ..... Drlg. 1,800 ft.
Elsy and Tauteaham's No. 1 Deason, 1,300 ft. from W and 3,700 ft. from S of survey, Juan Ximenes Sur. .. Csg. parted.
Elsy Drlg. Co.'s No. 1 Frederick, 150 ft. from S and 603 ft. from W of Frederick 90-ac. tract, Juan Ximenes Sur. ..... Derrick.
Empire Oil & Refining Co.'s No. 1 Leverett, 150 ft. from S and 150 ft. from W of survey, J. C. Snow Sur. ..... Derrick.
Great Eastern Oil Co.'s No. 1 Mayfield-Alford, 250 ft. from S and 250 ft. from W of Alford tract, T. J. Moore Sur. ..... Location.
Green Pine Oil Co.'s No. 1 E. A. Thrash, 150 ft. from S and E lines of Thrash tract in Juan Ximenes Sur. ..... Drlg. 3,500 ft.
Gulf Production Co.'s No. 1 T. B. Cashem, 330 ft. from S and E lines of 95-ac. tract in Henry B. Dance Sur. ..... Drlg. 3,738 ft.
Gulf Production Co.'s No. 1 O'Quin, 330 ft. from the N and E lines of 54-ac. tract in the George Berry Sur. ..... Drlg. 3,691 ft.
Gulf Production Co.'s No. 1 Keeling, 1,550 ft. from E and 3,950 ft. from S of survey, F. Cordova Sur. .... Drlg. 2,060 ft.
Greely and Baker's No. 1 Thrash, 2,600 ft. from W and 1,850 ft. from N of survey, Juan Ximenes Sur. ..... Drlg. 2,200 ft.
Griffith's No. 1 J. F. Lowe, 800 varas E of W line and 200 varas S of N line of 268-ac. tract, William Williams Sur. ..... Drlg. 3,640 ft.
Haynes et al's No. 1 T. R. M. Lee, 3,300 ft. from W and 5,000 ft. from S of survey, M. J. Prue Sur. .... Base Pecan Gap 3,119 ft.; T. D. 3,575 ft.
Haynes Bros.' No. 1 Cash, 150 ft. from E and 150 ft. from S of 19-ac. tract, F. Cordova Sur. ..... Drlg. 2,900 ft.
W. B. Hamilton's No. 1 Gambrell, 180 ft. from S and 180 ft. from W of tract, R. McAnulty Sur. ..... Drlg. 2,645 ft.
W. M. Hobson's No. 1 Wilson, 335 ft. from N and 354 ft. from W lines of 31.2-ac. lease in M. J. Prue Sur ..... Drlg. 600 ft.
Humble Oil & Ref. Co.'s No. 1 Plowman, 163 ft. from S and 1,074 ft. E of NW cor. of M. L. Thompson 129.6-ac. tract, F. Cordova Sur. ..... Rig up.
Humble Oil & Refining Co.'s No. 1 Walker, 4,050 ft. from W line and 900 ft. from S of survey, F. Cordova Sur. ..... Rig up.
Albert Jones' No. 1 John Minnifee, 100 ft. from S and 1,000 ft. from W of survey on 70-ac. tract, T. J. Walling Sur. ..... Derrick.
C. C. Julian's No. 1 Motley, 780 ft. from N and 1,673 ft. from W of survey, J. T. McDaniels Sur. ..... Rigging up.
Kirby Petroleum Co.'s No. 1 Samp Stone, 4,100 ft. from W and 3,350 ft. from N of survey, M. J. Prue Sur. ..... Location.
Kimbrough et al's No. 1 Weatherby, 300 ft. from N and 300 ft. from E, Robert Martin Sur. ..... Fishing 3,460 ft.
Leonard Petroleum Co.'s No. 1 Sanger Bros., 390 ft. from N and 350 ft. from W of survey, J. P. Meredith Sur. ..... Spudded and shut down.
Magnolia Petroleum Co.'s No. 2 Moore, 330 ft. S and 448 ft. E of NE cor. of J. Womack Sur., Jesse Ellington Sur. ..... Moving in.
Madden et al's No. 1 Mose Mayfield, 960 ft. from S and 160 ft. from W line of 154-ac. lease, Daniel Clark Sur. ..... Testing 3,734 ft.
Mass and Tucker's No. 1 Matthews, 3,244 ft. from N, 4,356 ft. from E, Daines Cartimas Sur. ..... Drlg. 3,176 ft.
G. B. Mitchell et al's No. 1 Ras Pool, 2,700 ft. from E and 4,275 ft. from N of survey, M. J. Prue Sur. .... Shut down 3,551 ft.
Nat Saddler's No. 1 Ed Sparks, 350 ft. from E, 150 ft. from S of survey, L. C. Riggs Sur. ..... Set 8-in. csg.; T. D. 1,267 ft.
Standard Pipe Co.'s No. 1 W. P. Brett, 2,350 ft. from E and 975 ft. from N of survey, M. J. Prue Sur. .. Sand 3,700-49 ft.; preparing to set liner.
Pace et al's No. 1 Deason, 730 ft. from N and 152 ft. from W of Deason east 52-ac. tract, M. J. Prue Sur. ..... Set 6-in. csg.; T. D. 3,667 ft.
Pilot Oil Co.'s No. 1 J. E. Thrash, 205 ft. from N and 650 ft. from E of 62-ac. tract, F. Cordova Sur. ..... Drlg. 3,696 ft.
G. Pollard's No. 1 Young, 586 ft. S and 182 ft. W of NW cor. of Lide 30-ac. lease, M. J. Prue Sur. ..... Set 6-in. csg.; T. D. 3,650 ft.
Pharis and Sample's No. 1 Deason, 1,558 ft. E and 155 ft. S of SE cor. of H. Brooks tract in M. J. Prue Sur. ..... Shut down 3,050 ft.
Phillips Petroleum Co.'s No. 1 Wilson, 142 ft. from E and 135 ft. from S of Phillips 51-ac. tract, M. J. Prue Sur. ..... Drlg. 3,053 ft.
W. G. Ray Drlg. Co.'s No. 1 Wilson, 335 ft. from S and 240 ft. from W of lease, Richard McAnulty Sur. ..... Drlg. 2,820 ft.
Rowe et al's No. 1 Maxwell, 855 ft. from E and 237 ft. from S of B. F. Maxwell 59-ac. tract, R. H. Pinney Sur. ..... Derrick.
Southern Crude Oil Purchasing Co.'s No. 1 C. Smith, 330 ft. from S line and 150 ft. from E line of lease, William Killen Sur. ..... Drlg. 1,378 ft.
Stokes et al's No. 1 Mrs. M. M. Talley, 4,100 ft. from W and 1,050 ft. from N of survey ..... Moving in rig.
Sun Oil Co.'s No. 1 Horace Schuler, 3,850 ft. from W and 6,110 ft. from N of survey, J. B. De Cadena Sur. ..... Spudding.
Shell Petroleum Corp.'s No. 1 Able Holt, 150 ft. from N and 150 ft. from W of lease, Daniel Clark Sur. .. Building derrick.
Sinclair Oil & Gas Co.'s No. 2 W. D. Kinney, 200 ft. from E and 200 ft. from S of lease, J. B. De Cadena Sur. ..... Derrick.
Sinclair Oil & Gas Co.'s No. 1 March, 330 ft. from E and 330 ft. from S of March 441-ac. tract, Leonard Williams Sur. ..... Drlg. 1,720 ft.
Sinclair Oil & Gas Co.'s No. 1 Wilson, 335 ft. from N and 354 ft. from E of lease, Richard McAnulty Sur. ..... Oil sand 3,648-50 ft.
Sinclair Oil & Gas Co.'s No. 1 Mayfield, 855 varas from N and 758 varas from W of Mayfield 376.4-ac. tract, James Jordan Sur. ..... Sand 3,843-45 ft.; set csg.
Suttie's No. 2 Holland, 156 ft. from N and 152 ft. from W of Holland 41.7-ac. tract, M. J. Prue Sur. ..... Shut down 1,750 ft.
Stanolind Oil & Gas Co.'s No. 1 M. E. King, 320 ft. from N and 330 ft. from W of lease, Meredith McCabe Sur. ..... Rigging up.
The Texas Company's No. 1 Pinkston, 3,100 ft. from N and 150 ft. from E of survey, J. B. De Cadena Sur. ..... Derrick.
Tidal Oil Co.'s No. 1 Joel Shaw, 1,620 ft. from W and 1,900 ft. from S of survey, E. Collard Sur. ..... Moving in rig.
Tidal Oil Co.'s No. 2 Irion, 6,300 ft. from W and 6,500 ft. from N of survey, M. J. Prue Sur. ..... Drlg. 110 ft.
Vitek's No. 1 Jobe, 2,950 ft. from W and 3,260 ft. from N of survey, Juan Ximenes Sur. ..... Set 6-in. csg.; T. D. 3,615 ft.

SMITH COUNTY

Bailey Gaunce et al's No. 1 S. S. Cooke, 150 ft. from S and 150 ft. from W of S. S. Cooke 20-ac. tract in 189-ac. tract, Juan Vargus Sur. ..... Spudding.

Big Indian Oil Co.'s No. 1 Mills, 1,045 ft. E along S line of C. Mills 67.8-ac. farm, SW cor. of same and 710 ft. N at right angles to S line of 67.7 acres, J. Jordan Sur. ..... Derrick.

G. E. Bunte, trustee's No. 1 A. S. Jarvis, 150 ft. from S and 150 ft. from W of 267-ac. tract, Juan Vargus Sur. ..... Rig up.

Concord Oil Co.'s No. 1 Wolford, 147 ft. from S and 147 ft. from W of Wolford tract, center of 2-ac. lease, James Jordan Sur. ..... Derrick.

Cotton Belt Oil Co.'s No. 1 C. S. Jackson, 600 ft. from N and 600 ft. from W of 39.85-ac. tract, Henry Mickleborough Sur. ..... Derrick.

Dumas' No. 1 Cooke, 1,558 ft. SE along center line of Highway No. 64 from point where S. S. Cooke 17.6-ac. tract W line intersects highway and 942 ft. at right angles to road, James Jordan Sur. .... Drlg. 3,713 ft.

East Texas Ref. Co.'s No. 1 Tyiska, 200 ft. from E and 200 ft. from S of survey, R. Wilson Sur. ..... Sand 3,833-41 ft.; set csg.; T. D. 3,841 ft.

Hancock and McCarthey's No. 1 J. C. Cross, 200 ft. from E of road and 200 ft. N of S line of survey on a 13-ac. tract, Burbridge Sur. ..... Derrick.

Joiner et al's No. 1 W. W. Wright, 847.5 varas from E and 647 varas from S of NW Wright 225-ac. tract, Van Sickle Sur. ..... Coring 3,602 ft.

Magnolia Petroleum Co.'s No. 1 Roy Loosier, 250 ft. from S and 250 ft. from W of 125-ac. tract or lease, Juan Vargus Sur. ..... Rig up.

Magnolia Petroleum Co.'s No. 1 Wright, 150 ft. from N and 150 ft. from W of J. R. Wright 87.9-ac. tract, Juan Vargus Sur. ..... Top Pecan Gap 3,670 ft.; base Pecan Gap 3,091 ft.; drlg. 3,450 ft.

Morrison's No. 1 L. Roy, 330 ft. N and E from SW cor. of 87-ac. tract in Henry Cools Sur. ..... Drlg. 1,345 ft.

Sinclair Oil & Gas Co.'s No. 1 Mayfield, 2,194 ft. from N and 3,625 ft. from W of 376-ac. Mayfield lease, James Jordan Sur. ..... Derrick.

Sinclair Oil & Gas Co.'s No. 1 Patterson, 300 ft. from E and 150 ft. from S of farm, Juan Vargus Sur..... Derrick.

E. L. Smith's No. 1 William Stone, 330 ft. from E and 150 ft. from S of survey, D. Campbell Sur. ..... Drlg. 1,300 ft.

Sun Oil Co.'s No. 1 J. Henson, 660 ft. from E and 6,700 ft. from S of survey, Juan Vargus Sur. ..... Drlg. 350 ft.

Sun Oil Co.'s No. 1 A. V. Rick, 205 ft. from N and 300 ft. from W of 99-ac. tract, Juan Vargus Sur. .... Set 10-in. csg. 219 ft.

Sun Oil Co.'s No. 1 J. J. Denton, 250 ft. from the N and 285 ft. from E lines of 114.3-ac. tract in Juan Vargus Sur. ..... Drlg. 2,500 ft.

Winona O. & G. Co.'s No. 1 Freeman, 150 ft. from S. W of 89-ac. tract in A. J. Legrone Sur., 4 miles SE of Winona ..... Shut down 3,681 ft.

Witherspoon Oil Co.'s No. 1 T. O. Wright, 150 ft. from NE cor. of Sinclair-Wilson lease, 1,340 ft. from W and 225 ft. N at right angles, Juan Vargus Sur. ..... Sand 3,666-73 ft.; set 6-in. csg. 3,630 ft.

UPSHUR COUNTY

Arcadia Refining Co.'s No. 1 R. S. Johnson, 1,000 ft. from N and 1,000 ft. from E of survey, J. H. Mallory Sur. ..... Drlg. 1,415 ft.

Brannan and Wood's No. 1 Robertson, center of Robertson 41-ac. tract, Ira Stephenson Sur. ..... Shut down 3,602 ft.

Joe Burnham's No. 1 Lena Beck, 4,000 ft. from S and 1,200 ft. from W of survey, H. W. Augustine Sur. .. Moving in material.

Joe Burnham's No. 1 Beck, 1,120 ft. N and 1,200 ft. E of SW cor. of Beck 138-ac. tract, Henry Augustine Sur. ..... Location.

Crockrell et al's No. 1 C. A. Gee, 150 ft. out of SE cor. of 26-ac. tract, 6 miles N of Gladewater, W. W. Parmer Sur. ..... Location.

Fleetburn Oil Corp.'s No. 1 J. K. Edwards, 150 ft. from SE and 250 ft. from S of E 81 acres of 281-ac. tract, David Ferguson Sur. ..... Drlg. 1,009 ft.

J. W. Green's No. 1 J. W. Wooden, 200 ft. from E and 200 ft. S of survey, Isham Williams Sur. ..... Waiting on csg.

Humble Oil & Refining Co.'s No. 1 J. K. Edwards, 325 ft. out of SE cor. of the W 200 acres of the 281-ac. tract, B. Ferguson Sur. ..... Location.

E. R. Perkins et al's No. 1 Ksy, 660 ft. from S and 660 ft. from W of survey, Thomas J. Elliott Sur. .. Shut down 200 ft.

H. H. Trammell's No. 1 Mary A. Victor, 150 ft. out of SE cor. of SE 40 acres and E 100-ac. tract of W 200 acres of Mary Victor Sur., E. J. Evans Sur. ..... Location.

VAN ZANDT COUNTY

Dennis Oil Co.'s No. 1 Morris, 1,050 ft. S of N line and 350 ft. W of E line of the center west of Morris 160-ac. tract in the C. L. Morris Headright Sur. .... Old well being drilled deeper; rigging up.

J. C. Fare's No. 1 P. S. Hand, C of Hand's 50-ac. tract, William Shuman Sur. ..... Shut down 5,160 ft.

Hart Petroleum Corp.'s No. 1 M. L. Cox, 1,785 ft. N of S line and 524 ft. E of W line of Cox 300-ac. tract in Nugent Headright Sur. ..... Old well being drilled deeper; moving in.

H. Helms et al's No. 1 Bogue, 647 ft. W and 155 ft. S of SE cor. of J. M. Brown 70-ac. in Marshall University Sur., SE of Van ..... Shut down 3,098 ft.

Humble Oil & Ref. Co.'s No. 1 L. A. Dowdle, 1,027 ft. N of S line and 150 ft. E of W line, William Daniel Sur ..... Temp. abnd. 2,987 ft.

Humble Oil & Ref. Co.'s No. 1 York, 150 ft. from E and 175 ft. from S, William Daniel Sur. ..... Drlg. 2,050 ft.

Kelly Oil & Gas Co.'s No. 1 Lemsford, center of Lemsford tract, John Conner Sur. ..... Shut down 2,300 ft.

Neil McMehory's No. 1 R. V. Murphy, 150 ft. from N and 150 ft. W of survey, H. Bailey Sur. ..... Shut down 2,450 ft.

Pure Oil Co.'s No. 2 Shivers, 200 ft. S of N line and 200 ft. E of W line of lease, John Walling Sur. .... Location.

Pure Oil Co.'s No. 3 R. C. Crim, 250 ft. N of S line and 250 ft. W of E line of lease in Nacogdoches County School Land Sur. ..... Preparing to swab; T. D. 2,979 ft.

Pure Oil Co.'s No. 1 B. W. Russell, 650 ft. W of E line and 150 ft. S of N line of lease in David Rose Sur. ..... Drlg. 2,565 ft.

Pure Oil Co.'s No. 7, 370 ft. N of S line and 200 ft. W of E line of 109-ac. tract, John Walling Sur. .... Location.

Pure Oil Co.'s No. 2 A. D. Clark, 70 ft. N of S line and 120 ft. E of W line of lease, J. Walling Sur. ..... Location.

Pure Oil Co.'s No. 8 W. T. Jarman, 325 ft. S of N line and 250 ft. E of W line of lease in Nacogdoches County School Land ..... Derrick.

Pure Oil Co.'s No. 5 R. L. Wells, 230 ft. W of E line and 94 ft. S of N line of lease in Mund Gross Sur ..... Drlg. 2,295 ft.

Pure Oil Co.'s No. 3 L. A. Smith, 707 ft. S of N line and 250 ft. W of E line of lease in John Walling Sur. ..... Rigging up.

Van Oil Association's No. 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. .... Shut down 1,028 ft.

WOOD COUNTY

Loche & Clark's No. 1 A. C. Pick, 165 ft. S of NE cor. G. C. Reeves 25-ac. tract, Daniel Fuller Sur. .... Shut down 997 ft.

Deep Rock Oil Co.'s No. 1 Maud Smith, center of Maud Smith S 40-ac. tract, L. Johnson Sur. ..... Moving in rig.

Vitek Oil Co.'s No. 1 Rosa Bogel, 350 ft. from N and 600 ft. from W of survey, Sarah English Sur. ..... Spudded; shut down.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 60)

CROCKETT COUNTY

Doleman & Moore's No. 1 Perner, 3,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur. ..... Spudded and shut down.

CULBERSON COUNTY

Cranfill Bros. and Sholts' No. 1 Seay, 2,310 ft. from S and W Sec. 45, Blk. 60, Public School Land ..... Shut down 2,430 ft.

Kornrumpf et al's No. 1 Garren, 330 ft. S and W Sec. 15, Blk. 79, Public School Land ..... Shut down 1,280 ft.

DAWSON COUNTY

Albaugh et al's No. 1 Robinson, C NW Sec. 46, Blk. M, E.L.&R.R. Sur. ..... Spudded 20 ft. and shut down.

ECTOR COUNTY

Galt, Brown & Penn's No. 1 Cowden, C SE Sec. 12, Blk. 44, Twp. 2s, T.&P. Sur. ..... Shut down 3,860 ft.

H. F. Wurts' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW Sec. 16, Blk. 46, Twp. 3s, G.M. M.Br.&A. Sur. ..... Shut down 3,275 ft.

EL PASO COUNTY

Lane-The Texas Company's No. 1 Malone, 2,110 ft. from SW and NW of Sec. 46, J. M. Day Sur. ..... Shut down 3,089 ft.

Tri-State Oil Co.'s No. 1 Bobadella, 1,325 ft. from S and E lines Sur. 254, S.F. No. 7,247 ..... Fishing 615 ft.

FISHER COUNTY

Stanolind Oil & Gas Co.'s No. 2 Steele, 1,200 ft. E and 330 ft. N of SW cor. Sec. 210, B.B.B.&C. Sur. ..... Top lime 1,600 ft.; shut down 2,015 ft.; show oil 2,924-34 ft.

The Texas Company's No. 1 Jean, 330 ft. from E and 400 ft. S of Sec. 201, Blk. 1, B.B.B.&C. Sur. ..... Drlg. 1,249 ft.

GAINES COUNTY

Landreth Prod. Co.'s No. 1 Alley, 660 ft. from N and W of Sec. 2, Blk. A-30, P.S.L. Sur. ..... Drlg. 1,237 ft.

Texas Consolidated Oil Co. et al's No. 1 Jones, 2,310 ft. from NE Sec. 4, Blk. A-8, P.S.L. Sur. ..... Shut down 3,435 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 4, H.&G.N. Sur. ..... Spudded and shut down.

Perry & Posey's No. 1 Justice, 1,980 ft. from S and 1,680 ft. from E of Sec. 25, Blk. 6, H.&G.N. Sur. (3,500-ft. cable tool test) ..... Shut down 2,725 ft.

HOWARD COUNTY

Continental Oil Co.'s No. 1 Brindley, 660 ft. from S and E of Sec. 18, Blk. 33, Twp. 1s, T.&P. Sur. ..... Drlg. 3,075 ft.

Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W Sec. 14, Blk. 29, Twp. 1s, T.&P. Sur.. Spudded and shut down.

HUDSPETH COUNTY

Henshaw's No. 1 Love, C NE Sec. 9, Blk. 67½, P.S.L. Sur. ..... Location.

Patillo & Welch's No. 1 Briggs, 300 ft. from S and W Sec. 13, Blk. 73, Twp. 7, T.&P. Sur. ..... Drlg. 676 ft.

Theison's No. 1 University, 2,050 ft. from S and 2,225 ft. from E of Sec. 17, Blk. E ..... Spudded 35 ft. and shut down.

IRION COUNTY

Central Oil Co.'s No. 2 Horney, 150 ft. from N and 1,320 ft. from E Sec. 2, Blk. 3, H.&T.C. Sur. ..... Fishing 1,580 ft.

Davis et al's No. 1 Suggs, 1,560 ft. from S and 925 ft. from W, Sec. 3,031, Blk. 28, H.&T.C. Sur. ..... Rig.

Dixie Oil Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. ..... 300 ft. oil in hole from 4,155-63 ft.; top Pennsylvanian 4,875 ft.; drlg. 5,645 ft.

Fox's No. 1 Horney, 1,520 ft. from N and 1,525 ft. from W Sec. 2, Blk. 3, H.&T.C. Sur. ..... Drlg. 635 ft.

Straughn & Texannati Oil Co.'s No. 1 Tankersley, 150 ft. from S and 750 ft. from W of Sec. 4, Gonzales County School Land ..... Plugging back to 1,220 ft. to shoot; total depth 1,506 ft.

JONES COUNTY

Abers et al's No. 1 Burton, 150 ft. from S and 175 ft. from E of 43.4-acre tract in G. Martinez Sur. ..... Shot 20 qts. 2,546.66 ft.

Barney & Duffy's No. 2 King, 3,700 ft. from N and 200 ft. from E, Subd. No. 18, M. Bueno Sur. ..... Location.

Hardly Able Oil Co.'s No. 1 Butter, 5,790 ft. from S and 330 ft. from E of W. Littlefield Sur. No. 282, Abst. 251 ..... Shut down 2,610 ft.

Union Oil Co.'s No. 2 King, 4,100 ft. from N and 200 ft. from E, Subd. 18, Bueno Sur. ..... Location.

Andy Urban's No. 1 Riddle, 300 ft. from S and 150 ft. from E, Blk. 32, A. W. Hill Sur. ..... Location.

Young & McNeil's No. 1 L. R. Cade, 150 ft. from N and 450 ft. E of NW cor. of J. A. Williams 200-acre tract in Sec. 17, but in Sec. 12, Blk. 19, T.&P. Sur. ..... Total depth 2,185 ft.; running 8¼-in. casing.

LOVING COUNTY

Eppenauer et al's No. 2 Allen, 2,310 ft. from NE and 330 ft. from NW Sec. 90, Blk. 1, W.&N.W. Sur. ..... Shut down 4,140 ft.

Ervin & Mahres' No. 1 Thrope, 2,310 ft. from E and 330 ft. from S Sec. 46, Blk. 53, T.&P. Sur. ..... Shut down 810 ft.

Ervin & Mahres' No. 1 Meyer, 990 ft. NE and 330 ft. SE of Sec. 3, Blk. 2, W.&N.W. Sur. ..... Location.

Falbre & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW Sec. 79, Blk. 33, H.&T.C. Sur. ..... Drlg. 1,465 ft.

Hoffman et al's No. 1 Ramsey et al, 330 ft. NE and SE Sec. 83, Blk. 1, W.&N.W. Sur. ..... Total depth 4,245 ft.; flowed 715 bbls. in 15 hours after 140-qt. shot at 4,205-45 ft.

Hoffman et al's No. 2 Ramsey et al, 2,310 ft. from NE and 330 ft. from SE Sec. 83 ..... Drlg. 2,371 ft.

Irwin et al's No. 1 Auld, 1,325 ft. from NE and 1,298 ft. from NW Sec. 67, Blk. 1, W.&N.W. Sur. ..... Rig up.

Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Shut down 4,050 ft.

Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W Sec. 91, Blk. 1, W.&N.W. Sur. ..... Rigged up and shut down.

Lockhart's No. 1 Bell, 1,721 ft. from NE and 410 ft. from SE Sec. 91, Blk. 1, W.&N.W. Sur. ..... Total depth 4,048 ft.; running 6⅝-in. casing.

Martin et al's No. 1 Johnson, 1,320 ft. from NW and 330 ft. from SW Sec. 86, Blk. 1, W.&N.W. Sur. ..... Location.

Richmond Drlg. Co.'s No. 1 Russell, 990 ft. from NE and 330 ft. from NW Sec. 80, Blk. 31, W.&N.W. Sur.. Drlg. 3,462 ft.

Rush et al's No. 1 Wheat, 330 ft. from NW and SW Sec. 77, Blk. 1, W.&N.W. Sur. ..... Cellar.

Slagel Drlg. Co.'s No. 1 Cartwright et al, 2,310 ft. from S and 990 ft. from W Sec. 1, Blk. 57, Twp. 1, T.&P. Sur. ..... Total depth 3,182 ft.; plugged back to 3,174 ft.; testing, cleaning out and swabbing.

W. A. Suddreth et al's No. 1 Capitola Pool, 2,970 ft. from NE and 990 ft. from NW Sec. 73, Blk. 33, H.&T.C. Sur. ..... Shut down 1,315 ft.

Tennant et al's No. 1 Martin, 990 ft. from NW and SW Sec. 66, Blk. 1, W.&N.W. Sur. ..... Total depth 250 ft.; running 6⅝-in. casing.

California Co.'s No. 3 Allen, 2,191 ft. from NW and 2,182 ft. from SW Sec. 90, Blk. 1, W.&N.W. Sur. ..... Cemented tools 2,358 ft.

California Co.'s No. 4 Allen, 3,121 ft. from NW and 2,113 ft. from SW Sec. 90, Blk. 1 ..... Top salt 855 ft.; drlg. 2,225 ft.

West Texas Pet. Corp.'s No. 1 Salsbury, 330 ft. from NW and SW Sec. 39, Blk. 1, W.&N.W. Sur. ..... Top pay 4,380 ft.; shut down 4,400 ft.; to shoot.

MENARD COUNTY

Priest's No. 1 Sorrel, 1,000 ft. from E and 200 ft. from S cor. Sec. 132, E.L.R.R. Sur. — Shut down; total depth 2,665 ft.

PECOS COUNTY

Hagen et al's No. 1 Shearer, 660 ft. from SE and 660 ft. from SW Sec. 45, Blk. 10, H.&G.N. Sur. — Top salt 1,035 ft.; total depth 1,675 ft.; running 5 3/16-in. casing.

Honolulu Oil Co.'s No. 1 Webb, 3,140 ft. from N and 1,000 ft. from W of Sec. 105, Blk. OW, G.S.&S.F. Sur. — Drlg. 410 ft.

J. R. Miller et al's No. 1 Bennett, 359 ft. W of CWL Sec. 1, Blk. 113, G.C.&S.F. Sur. — Shut down 2,283 ft. for casing.

Penn Oil Co. et al's No. 1 Alvis, 2,358 ft. from S and 1,327 ft. from W Sec. 155, Blk. 3, T.&P. Sur. — Total depth 3,602 ft.; show oil 3,601-02 ft.

Perren Oil Co.'s No. 2 Eaton, S of E Sec. 27, Blk. 3, H.&T.C. Sur. — Fishing 1,765 ft.

Pure Oil Co.'s No. 1 Harrison, 2,310 ft. from N and 330 ft. from W of Sec. 203, Blk. 3, T.&P. Sur. — Shut down 5,000 ft.

California Co. et al's No. 1 Thomas, 990 ft. from NW and SW Sec. 31, Blk. 34, H.&T.C. Sur. — Location.

Whitaker et al's No. 1 Mary Devlin, 150 ft. from N and 150 ft. from E Sec. 69, F. Hernandez Sur. — Shut down 430 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 6-C University, 1,120 ft. S and 1,100 ft. from W Sec. 25, Blk. 9 — Location.

REEVES COUNTY

R. T. Hansford's No. 1 Williams, 150 ft. from S and W Sec. 17, Blk. 6, E.&G.N. Sur. — Shut down 580 ft.

Humble Oil & Ref. Co.'s No. 1 Bolmorhea Livestock Co., 1,320 ft. from N and 1,320 ft. from W Sec. 33, Blk. 5, H.&G.N. Sur. — Drlg. 675 ft.

Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur. — Drlg. 4,502 ft.

California Co.'s No. 2 Kloh & Rumsey, 990 ft. from S and 1,650 ft. from E Sec. 11, Blk. 74, Twp. 4, T.&P. Sur. — Top salt 2,675 ft.; drlg. 4,037 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 419 — Shut down 2,335 ft.; underreaming 8¼-in. casing.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur. — Drlg. 2,425 ft.

Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,362 ft. from E of Sec. 77, Blk. LL, T.C. Sur. — Fishing 3,705 ft.

George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,570 ft. from W, G.H.&S.A. Sur. — Shut down 5,053 ft.

SCURRY COUNTY

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. — Shut down 5,100 ft.

Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W Sec. 68, Blk. 3, H.&G.N. Sur. — Spudded and shut down.

Seifert & Dibble's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 153, Blk. 97, H.&T.C. Sur. — Drlg. 3,785 ft.

Simon & Brock et al's No. 1 Cruse, 2,310 ft. from S and E Sec. 119, Blk. 97, H.&T.C. Sur. — Moving in material.

STERLING COUNTY

Beesley et al's No. 1 Foster, 2,940 ft. N and 300 ft. W of SW cor. Sec. 7, Blk. 22, H.&T.C. Sur., but in Sec. 16, Blk. 14, Twp. 4s, T.&P. Sur. — Drlg. 2,073 ft.

TAYLOR COUNTY

John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor. Sec. 46, Lunatic Asylum Land — Drlg. 6,393 ft.

Sanger et al's No. 1 City of Abilene, 330 ft. from S and 1,400 ft. from E of Sec. 66, Blind Asylum Land — Shut down 2,785 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T. Sur. — Shut down 2,663 ft.

Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. — Shut down 3,150 ft.

Miller Bros. No. 1 Allison & Burke, C NW cor. Sec. 10, Blk. 176, T.&P. Sur. — Shut down 120 ft.

Mid-Kansas Oil & Gas Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S Sec. 26, Blk. 161, G.C.&S.F. Sur. — Shut down 6,120 ft.

Woodley & Jones' No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur. — Preparing to run 10-in. casing; total depth 1,075 ft.

TOM GREEN COUNTY

Belding & Dutton's No. 1 Norsworthy, 2,640 ft. from S and 587 ft. from E of John McNeese Sur. — Shut down 760 ft.; show oil and gas 725 ft.

Fitzgerald & Taliaferro's No. 1 Bennett, C SW Sec. 1,628, E. H. Dinger Sur. — Plugged back to 2,405 ft. to straighten hole; shut down 2,447 ft.

Mintex Oil Co.'s No. 1 Campbell Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur. — Shut down, 1,994 ft.

Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2 — Shut down 200 ft.

UPTON COUNTY

Mintex Oil Co.'s No. 1 Lane, 2,310 ft. from N and 1,650 ft. from W Sec. 36, Blk. 1, M.-K.-T. Sur. — Top salt 738 ft.; shut down 2,134 ft.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 10, Blk. 4, L.&G.N. Sur., elev. 1,175 ft. — Shut down 5,420 ft.; to run 5 3/16-in. casing.

O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, L.&G.N. Sur., elev. 2,130 ft. — Shut down 6,780 ft.

WARD COUNTY

Bradford et al's No. 1 Carson, 990 ft. from NE and SE Sec. 26, Blk. 5, H.&T.C. Sur. — Drlg. 1,927 ft.

Bradford & Abell's No. 2 Boogher, 1,160 ft. from NW and 800 ft. from SW, Sec. 11, Blk. 5, H.&T.C. Sur. — Rigging up.

Beckley et al's No. 1 Johnson, 4,140 ft. from NE and 990 ft. from SE Sec. 8, Blk. 32, H.&T.C. Sur. — Drlg. 1,576 ft.

Buster Black's No. 1 Hall & Roberts, 990 ft. from NE and 1,650 ft. from NW, Sec. 17, Blk. 32, H.&T.C. Sur. — Drlg. 1,025 ft.

Clyde Bradford's No. 1 Hardinage & Welsor, 330 ft. from SE and 330 ft. from SW, H.&T.C. Sur. — 1,300 ft. fluid in hole, 75% oil; oil; est. good for 100 bbls. per day; total depth 2,475 ft.; to run tubing.

Central Oil & Gas Co.'s No. 1 Barrow, 330 ft. from NW and 1,263 ft. from SW, Sec. 55, J. W. Jackson Sur. — Spudded and shut down.

Gibson & Johnson's No. 1 Johnson, 4,140 ft. from SE and 990 ft. from NE, Sec. 10, Blk. 32, H.&T.C. Sur. — Drlg. 1,391 ft.

Hankinson et al's No. 1 Emery, 3,630 ft. from SE and 510 ft. from SW, Sec. 26, Blk. 5, H.&T.C. Sur. — Top salt 840 ft.; drlg. 845 ft.

Magnolia Pet. Co.'s No. 1 Sealy (Atlantic), 2,130 ft. from S and 1,650 ft. from E, Sec. 45, Blk. F, G.M.M.B.&A. Sur. — Top salt 2,345 ft.; shut down 3,000 ft.

Pat Moran's No. 1 Sweatt, 1,470 ft. from SW and 150 ft. from NW Sec. 12, Blk. 5, H.&T.C. Sur. — Location.

R. F. Owens' No. 1 Johnson, 100 ft. from NE and 1,100 ft. from SE of Sec. 8, Blk. 32, H.&T.C. Sur. — Shut down 4,480 ft.

Peck et al's No. 1 Merrett, 3,166 ft. from NE and 2,648 ft. from SE, Sec. 11, Blk. 5, H.&T.C. Sur. — Drlg. 2,029 ft.

Rector Oil Co.'s No. 1 Smith, 1,320 ft. from N and E, Sec. 32, Blk. A, G.M.M.B.&A. Sur. — Rig.

Shipley et al's No. 5 Hayzlett, 2,490 ft. from SE and 1,980 ft. from SW, Sec. 17, Blk. 5, H.&T.C. Sur. — Shut down 2,520 ft.; 1,500 ft. oil in hole; waiting on tubing.

Simms Oil Co.'s No. 1 Himmel, 330 ft. from NE and 2,310 ft. from SE, Sec. 30, Blk. B-29, P.S.L. Sur. — Top salt 965 ft.; drlg. 1,981 ft.

Sturm's No. 1 Jones, 330 ft. from SW and SE of Sec. 25, Blk. B-29, P.S.L. Sur. — Elev. 2,519 ft.; drlg. 1,010 ft.

California Co.'s No. 1 Gordon, 330 ft. from NE and SE, Sec. 6, Blk. 34, H.&T.C. Sur. — Top pay 2,352 ft.; total depth 2,599 ft.; flowed 91 bbls. in 3 hours; running tubing.

Shipley et al's No. 1 Monroe, 330 ft. SE SW, Sec. 3, Blk. 1 — Drlg. 4,259 ft.

WINKLER COUNTY

White et al's No. 1 Owenby, 305 ft. from NE and 1,185 ft. from SE, Sec. 7, Blk. 32, H.&T.C. Sur. — Shut down 200 ft.

Liner Drlg. Co.'s No. 1 Campbell, 350 ft. from N and E cor., Sec. 2, Blk. B-5 — Shut down 4,640 ft.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 60)

Danciger O. & R. Co.'s No. 1-B Barrett, SW cor. N½ NE, Sec. 128, Blk. 3, I.&G.N. Sur. — S.D. 2,980 ft.

Danciger O. & R. Co.'s No. 1 Barnett, 231 ft. S, 330 ft. W, E½ of N 56 ac., Sec. 136, Blk. 3, I.&G.N. Sur. — 5,000,000 ft. gas 3,097 ft; S.D. 3,180 ft.

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 200, Blk. B-2, H.&G.N. Sur. — S.D. 2,770 ft; P.B. 2,430 ft. and shot with 80 qts. 2,409-30 ft.

Interstate Prod. Co.'s No. 1 Frazier, C of W 100 ac., of SW, Sec. 177, Blk. 3 — Bldg. rig.

Magnolia Pet. Co.'s No. 1 Barnett, 330 ft. S and E, NE, Sec. 112, Blk. 3, I.&G.N. Sur. — S.D. 3,360 ft; 400 ft. oil and wtr. in hole; to pump.

Nelson et al's No. 1 Crews, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur. — S.D. 2,619 ft.

Operators Royalty & Prod. Co.'s No. 2 Vanniman, 330 ft. S and W, E½ NE, Sec. 175, Blk. 3, I.&G.N. Sur. — Fishing; T.D. 2,915 ft.

Sanders et al's No. 1 Wright, 330 ft. S, 114 ft. E, Sec. 12, Blk. 3, I.&G.N. Sur. — Drlg. 2,691 ft.

Stanolind O. & G. Co.'s No. 2 Cobb, 330 ft. S and E, Sec. 165, Blk. 3, I.&G.N. Sur. — T.D. 3,272 ft; T.P. 3,254 ft; shot with 150 qts. 3,206-72 ft; C.O. and swbng.

Steckoll & Reiger's No. 1 Davidson, 660 ft. N and W, Sec. 64, Blk. B-2, H.&G.N. Sur. — Rigging up.

Sullivan & Ochiltree's No. 1-A Morse, 330 ft. S and W, N½ NE, Sec. 15, Blk. A-9, H.&G.N. Sur. — S.D. 2,636 ft.

Warner Oil Co.'s No. 1 Morse, 330 ft. S and W, N½ NW, Sec. 68, Blk. 25, H.&G.N. Sur. — Cellar.

HUTCHINSON COUNTY

Danciger O. & R. Co.'s No. 1 Johnson, 330 ft. N and W, SE, Sec. 34, Blk. Y, A.&B. Sur. — Rig on ground.

Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 81, Blk. 46, H.&T.C. Sur. — S.D. 450 ft.

Huber Prod. Co.'s No. 1 Johnson Bros. (Premier), 330 ft. N and E of W 60 ac., N 80 ac., NW, Sec. 3, Blk. Y, A.&B. Sur. — Big gas 2,330 ft. and 2,395 ft; drlg. 2,612 ft.

Huber Pet. Co.'s No. 1 McIlroy, 330 ft. S, 330 ft. W, Sec. 28, Blk. Y, A.&B. Sur. — T.D. 3,032 ft; to run 5-in. csg.

Liner Drlg. Co.'s No. 1-D Johnson Bros., 330 ft. N and E, W½ SW, Sec. 6, Blk. 1, B.&B. Sur. — T.D. 2,916 ft; to U.R. 6-in. csg.; 2,000,000 ft. gas 2,915 ft.

Liner et al's No. 1 Johnson Bros., 990 ft. S, 330 ft. E, W½ SE, Sec. 29, Blk. Y, A.&B. Sur. — Spudded and S.D.

Stanolind O. & G. Co.'s No. 2-A Pitcher, 990 ft. S, 330 ft. W, SE, Sec. 19, Blk. M-21, T.C.R.R. Sur. — Running 5-in. csg. 3,015 ft; T.D. 3,150 ft.

Harry Steckel's No. 4 Whittenburg, 990 ft. N, 330 ft. E, NE, Sec. 89, Blk. Z, L.C.&S.F. Sur. — Drlg. 2,805 ft.

Skelly Oil Co.'s No. 1 Johnson Bros., 660 ft. S and W, SE, Sec. 30, Blk. Y, A.&B. Sur. — S.D. 3,115 ft.

The Texas Co.'s No. 1 Moore, 990 ft. N, 330 ft. W, SE, Sec. 21, Blk. M-21, T.-C. Ry. Sur. — C.O. 3,140 ft; swbd. 16 bbls. oil and 16 bbls. wtr. in 6 hrs. after plugging back.

Timms-Deatch's No. 4 Moore, 330 ft. N and W, Sec. 124, Blk. 4, I.&G.N. Sur. — Rig.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. — T.D. 5,003 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch — Small S.O. 1,133-40 ft; S.D. 4,167 ft.

MOORE COUNTY

Cloud & Dana's No. 1 Jones, 330 ft. N and E, SW, Sec. 169, Blk. 3-T, T.&N.O. Sur. — T.D. 3,220 ft; estimated 74,000,000 ft. gas.

Dana O. & G. Co.'s No. 1 R. Utey, 330 ft. S and W, NE, Sec. 135, Blk. 3, T.&N.O. Sur. — T.D. 3,526 ft; making 5 bbls. wtr. and 1 bbl. b.s. per day.

Gulf Prod. Co.'s No. 2 Kilgore, C SE, Sec. 29, Blk. P.Mc., L.R.R. Sur. — Drlg. 3,206 ft; estimated 500,000 ft. gas.

Interstate's No. 1 Nield, C NE, Sec. 18, Blk. 44, H.&T. C. Sur. — Location.

Magnolia Pet. Co.'s No. 1 Jones, 330 ft. N, 330 ft. E, Sec. 170, Blk. 3-T, T.&N.O. Sur. — Rotary rig.

Sunray Oil Co.'s No. 1 Rupert, 660 ft. N, 330 ft. E, NW, Sec. 191, Blk. 3-T, T.&N.O. Sur. — Cellar.

Plains Holding Co.'s No. 2 Bivins, 1,115 ft. S, 627 ft. E, Sec. 93, Blk. 46, H.&T.C. Sur. — Standardizing at 2,010 ft.

Sunray Oil Co.'s No. 2 Jones, 330 ft. N and W, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. — Rig on ground.

The Texas Co.'s No. 1 Jester, C SW, Sec. 14, Blk. 6-T, T.&N.O. Sur. — Gas 2,296-2,300 ft; standardizing 2,485 ft.

Texas Interstate P. L. Co.'s No. 1-26 Thompson, C N½, NE, Sec. 26, Blk. 44, H.&T.C. Sur. — Location.

Texas Interstate P. L. Co.'s No. 1-33 Sneed, C SW, Sec. 33, Blk. 6-T, T.&N.O. Sur. — Location.

Texas Interstate P. L. Co.'s No. 1-37 Sneed, C NW, Sec. 37, Blk. 6-T, T.&N.O. Sur. — Location.

Texas Interstate P. L. Co.'s No. 2-55, C SE, Sec. 55, Blk. 6-T, T.&N.O. Sur. — Location.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 16, Blk. G, B.&B. Sur. — S.D. 530 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. — S.D. 400 ft.

Chambers et al's No. 1 Herring, CNL, Sec. 20, Blk. S, G.C.&S.F. Sur. — S.D. 800 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1-B Crawford — 3,000,000 ft. gas 1,900-10 ft; S.D. 2,535 ft; estimated 9,000,000 ft. gas.

ROBERTS COUNTY

Chicken Creek Oil Co.'s No. 1 Ledrick, 330 ft. N and W, Sec. 55, Blk. C, G.&M. Sur. — Rigging up standard tools.

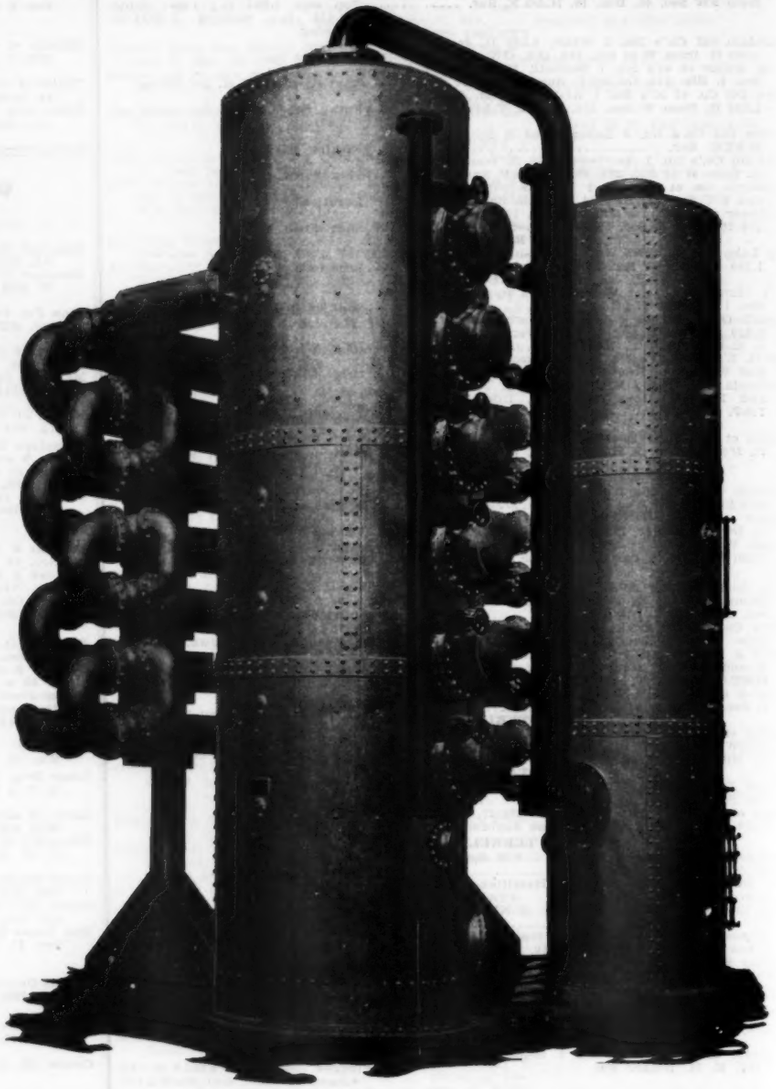
Travis et al's No. 1 Cunningham, 330 ft. S and W, Sec. 74, Blk. M-2, H.&G.N. Sur. — Drlg. 1,550 ft.

WHEELER COUNTY

Clarity et al's No. 1 Porter, NW cor. SE, Sec. 3, Blk. A-9, H.&G.N. Sur. — Rig.

Vollmert's No. 1 Porter, 330 ft. S and E, NE, Sec. 15, Blk. 27, H.&G.N. Sur. — Rigged up and S.D.

AS OPERATING MARGINS COME CLOSER AND CLOSER » THE EFFICIENCY OF TULSA TYPE EQUIPMENT STANDS OUT *More* AND *More*

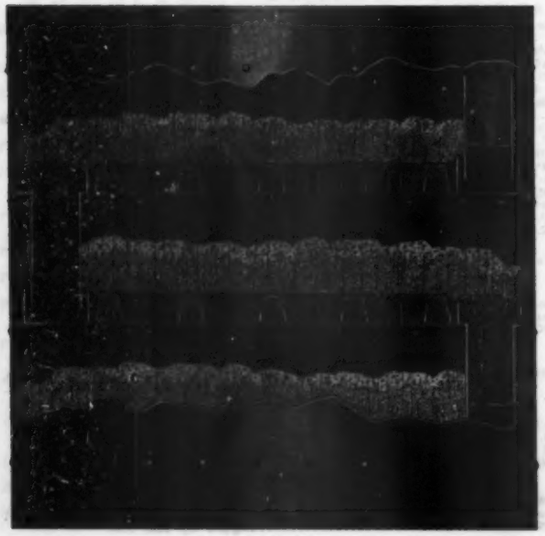


TULSA TYPE

Operators who have bought and installed Tulsa Type equipment in the past are now being repaid more than ever for their far-sightedness in efficient and economical operation.

Large illustration above shows Tulsa Type Evaporator and Dephlegmator, latest type, whose operation is simplified appreciably by the elimination of auxiliary equipment and by-passes.

Below is a cut-away view of Tulsa Type bubble tray equipment with unit down-spouts to effect uniform saturation and thorough mixing on each tray.



Always the first with major advancements in recovery equipment, Tulsa Boiler and Machinery Company now offers the Refining and Natural Gasoline Industries in Tulsa Type equipment, the plants and processes which insure profitable operation.

TULSA *Boiler & Machinery Co.*

TULSA OKLAHOMA

NATURAL GASOLINE PLANTS . . . TANKS . . . REFINING EQUIPMENT

"NEVER AGAIN WILL WE USE and WASTE EXTRAVAGANT FUEL „ IN THIS BIG PLANT

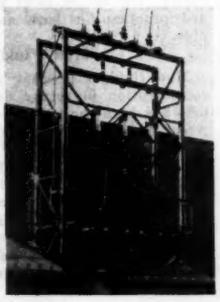
Now That We Are Fully Equipped With Dependable, Uninterrupted ELECTRIC POWER"

This statement comes from the general foreman, who has seen this plant grow from 25 employees, in the old steam and gas driven days, to a capacity today where it utilizes 325 employees—because of the greater flexibility and low cost of Electric Power.

"Every piece of machinery in this plant," says Mr. M. H. Kotzebue, Vice President and General Manager of the Tulsa Boiler & Machinery Co., "is Electrically direct-motor driven. Counting all, including 30 Electric Welding machines, we probably exceed a load of 1000 Electric Horse Power—and few of our motors have a greater capacity than 10 H. P.

"Having on hand a very large stock of steel, Electricity enables us to apply power in continuous operation, day and night and on rush jobs under unusual and difficult conditions and—now—always without our former steam-driven troubles when we had frequent shut-downs daily.

"Our main product is the manufacture of refinery and gasoline plant equipment, which requires the most exacting operations and power conditions. Electric Welding forms an important phase of our business. Uniform and uninterrupted electrical energy with smoothness of operation helps tremendously in realizing profits on close margin. Then, too, a steady flow of high voltage is essential at the welding point.



"More than any other single factor in our plant, I consider Electric voltage responsible for the superiority of our equipment and service. I cannot speak in too high a praise of the Public Service Company and its conscientious service to the Tulsa Boiler & Machinery Co.',

Any industry, large or small, can improve efficiency with *Dependable* Power

PUBLIC SERVICE
COMPANY of OKLAHOMA
PUBLIC SERVICE BUILDING • • • TULSA

DRILLING METHODS IN CALIFORNIA AREA

(Continued from Page 36)

which to stack pipe. These advantages are with the larger derrick, but there is a difference of opinion among operators as to whether this rig saves enough in drilling time and convenience to pay for their extra cost.

The latest derrick to be announced is the one which will be used by the Superior Oil Co. in drilling its No. 3 Hoffman to 8,500 feet more or less. This rig will have an A.P.I. rating of 174 feet with a 32-foot base. The safe is 1,000,000 pounds compared to 750,000 pounds for the average derrick. This rig is intended to pull 132 feet of drill pipe or three doubles.

Of interest under the heading of rigs is the new foundation in use at some of the more recent locations at Kettleman Hills. This may be described as open type foundation on which the derrick floor and the sills are supported by upright steel columns giving a clearance of 10 feet between the floor sills and the concrete mat. In addition to this clearance a further development is the use of a cellar 8 feet deep by 10x10 feet square. This cellar is equipped with stairs or a runway. With the addition of the cellar there is an overall clearance of 18 feet. The object of this is that when the well has been completed nothing will be above the derrick floor, the christmas tree and flow lines being taken care of by the 18-foot clearance.

In regard to the foundation for the big derrick mentioned, the corner piers will be 6x6 by 14 feet high, giving a clearance of 13 feet 4 inches between the top of the concrete mat and the floor sills.

Drawworks—To take care of increased power development larger and faster drawworks are in use. The latest types are four-speed, chain-driven, all-roller bearing 7x7½x8-inch line and drum shafts. A recent development is the replacement of the standard engine and calf wheel by addition of a secondary hoist, consisting of a rotary engine and a countershaft driving a drum. This development eliminates all of the cable tool rig irons. Bailing is done off a portable sand reel or off the secondary drum.

Rotary Tables—Rotary tables are all-roller bearing and may be either chain or shaft driven. At Kettleman Hills the usual sizes are 27½ inches and 30 inches.

Power—Power may be either the 12x12 enclosed type horizontal twin steam engine or electric motors up to 150 horsepower. Boiler installations may be either four 90-horsepower or four 100-horsepower boilers with 200 to 225 pounds working pressure.

Mud Pumps—May be either steam or motor driven. The average size is 14x7¼ by 14. The usual installation is two pumps, but at Kettleman Hills the recent tendency is to set three pumps which, when manifolded, are adequate for working pressures up to 3,000 pounds. At Kettleman Hills the pumps are set in a separate pump house and flush or below the settling tanks. Either wooden or metal ditches may be used and in addition vibratory screens are employed by some operators to separate cuttings and possibly some gas.

In addition to the above major equipment antifriction tool joints, weight indicators, etc., are in general use. In fact, there is such a variety of traveling blocks, crown blocks, tool joints, bits, swivels, etc., that it is very difficult to indicate a major choice.

Drilling Problems

The above suggests the usual selection of rotary material, and we may now take up a few major drilling problems:

Casing—Casing is an item of major importance and should be selected so that only a minimum number of sizes will be required. This will help in reducing drilling costs and the casing stock investment.

Recently, in the development of the deep zone at Long Beach, operators used below the surface pipe combinations of 11¾-inch, 8⅝-inch and a final oil string of 5¾-inch for wells up to 8,000 feet deep. At Ventura Avenue the practice is to set 13⅜-inch, 8⅝-inch and a 5 9/16-inch oil string for 7,000 to 8,000-foot wells.

Experience gained in the deep wells of these fields was of benefit to the Kettleman Hills operators in that it brought out the desirability of eliminating underreaming and the advantages of larger oil strings.

At Kettleman Hills the practice is to cement 1,000 to 1,500 feet of 20-inch outside diameter, 104-pound or 18⅝-inch by 96½-pound casing as a surface conductor. This pipe is cemented solid to the surface. The conductor is set at from 5,000 to 5,500 feet and on top of the brown shale. This string is intended to shut off the flowing waters of the brown shale below from the cavey shales above. This pipe may be either 13⅜-inch outside diameter, 83½-pound, 73½-pound or 68-pound or perhaps 11¾-inch, 60-pound, depending on the size of surface conductor used.

This conductor is cemented with about 2,000 sacks of cement and the job is speeded up by using two cement outfits. The two-plug method is used and the last 50 or 100 sacks are treated with a quick-setting reagent. About two hours are required to mix and place the cement.

The water string is set just above the Temblor formation or producing zone and at depths varying from 6,000 to 6,900 feet. The size of the water string may be regulated by the secondary conductor or if this is 13⅜-inch the water string may be 9⅝-inch by 53.6-pound or 47.2-pound, or it may be 9-inch by 54 or 45-pound casing. If an 11¾-inch conductor is used then 8⅝-inch by 44.85 or 36-pound casing may be used. Enough cement is used to reach up to the shoe of the secondary conductor. The oil string may be cemented through perforations just below the shoe of water string. This is done to confine the well pressure to the smaller size pipe fittings. Perforations vary from 80 to 250-mesh, according to operators' ideas.

Flow strings may be either 3-inch tubing or 4½-inch casing.

The drill pipe which is used at Kettleman Hills, as well as the smaller sizes of the above casing, is all grade "D" of 95,000-pound tensile strength..

Drill pipe sizes start with 8⅝-inch, 45-pound for the 27-inch hole in which to set surface casing, and in turn 6⅝-inch by 25.2-pound, 5 9/16-inch by 22.2-pound, and 4½-inch by 16.5-pound are used. Drill collars vary from 12 feet to 30 feet in length and several types of bits are used, including fishtail, disc, multibladed and rock bits. All bits are hard surfaced. Drilling lines may be either 2,000 feet or 2,500 feet long and 1 inch or 1½ inches in diameter. Drilling is done with six or eight lines and casing is run with 10 lines and heavy duty automatic slip type elevators and spider. The use of float valves is standard practice for both casing and drill pipe.

Mud Fluid

Mud fluid is another very important consideration in rotary drilling and one that has been the subject of considerable research and about which many articles have been published lately, particularly on the desirability of gel forming or colloidal admixtures. This and many other features of rotary mud are receiving the careful attention of California drillers. Perhaps the Ventura Avenue Field, with its high gas pressures and sandy formations, has made the greatest advance in this problem.

Drilling tools in the Ventura Avenue Field have been in constant operation since 1924 and due to the sandy nature of the formations which do not make mud and also to the fact that a temporary shutdown may mean a frozen drill stem, the mud problem has received considerable attention. In fact, the practice of having the standard engine always ready and turning over slowly while the rotary was drilling so that in case of trouble the drill pipe could be moved immediately, originated in this field. In addition to this is the problem of overcoming some of the highest gas pressure sands in the State. This condition requires that a supply of good mud be available at all times.

During the early part of the development of the field the practice was developed of furnishing mud for all of the wells from a central mixing plant and quarrying and pumping it to the drilling wells as required. When it was necessary to change the mud it flowed through flumes to sumps or catch basins where the sand was allowed to settle and the salvaged mud returned for further use. In time this disposal problem, because of the necessity of adding new sumps and dams and also the necessity of mining and mixing new mud, became a serious item of expense and it was decide to install the present reclamation plant. This plant was installed by the Associated Oil Co. at a cost of about $115,000, but this expense was returned in less than a year.

Operation Described

Briefly this system is an application of mining machinery to oil field problems, and its operation is as follows:

As the waste drilling mud comes from the well it passes into a 1,000-bbl. surge tank where it is fed into a small distributing tank, which feeds four Dorr Bowl classifiers at an even rate and in equal amounts. In these classifiers the sand settles out and is removed and discharged onto belt conveyors which convey the sand to the sand dumps. The gas is allowed to escape and the dilute clean mud and oil are conveyed by the overflow flume to the 200-foot in diameter Dorr Traction thickener. Here the heavier solids settle out and are moved by a slowly revolving truss, on which are attached racking blades, to the center discharge opening in the bottom of the tank where they are discharged by three 3-inch lines and pumped to storage for further use at the wells. Excess water and oil overflow to an oil skimming plant where the oil is saved and the excess water is allowed to waste.

The mud question is also a serious problem at Kettleman Hills, in that the wells require a heavy, high specific gravity mud to overcome the gas pressures and a mud with the least viscosity possible because of the depth of the wells and high pump pressures. Mud of 80 and 85 pounds per cubic foot is in general use, not only to prevent caving shales but to retard the flowing salt water of the brown shale formations. Companies operating in this field have found it profitable to install complete mud plants, including vibrating screens for removing coarse cuttings and to some extent degassing the mud. This apparatus has effected a real saving in pump costs.

Straight Hole Drilling

Another subject of extreme importance is straight hole drilling, particularly so when it is evident that crooked holes cause slow drilling, frequent fishing jobs, failure in correlation between wells, muding up of producers and sometimes the loss of the hole; also, when on production the wells are difficult to pump by reason of excessive wear on tubing and rods.

This problem has been given much thought and attention by practical drillers and it seems to be the general opinion that the chief cause of crooked holes is the improper application of weight, such as crowding and uneven feeding of the bit. In addition to this variation of hard and soft strata, steeply dipping formations and caving formation are sources of trouble. Other causes may be due to the manner in which the drilling equipment is handled or the failure of the pump to furnish enough fluid to carry away the cuttings, uneven rotational speeds, and neglect to center the smaller hole when leaving the casing or coring in large holes.

All of these possibilities are well-known to careful operators and in their attempts to avoid them they have adopted certain standard practices, such as the use of long heavy drill collars immediately above the bit and by using a reasonable amount of weight on the bit, thus preventing buckling of the drill pipe; also, by using as high a rotary speed as conditions will permit, thus cutting a clean hole instead of augering into the formation. Pump pressures and volume are sufficient to wash the hole clean of cuttings. Bits are kept sharp and true to gauge in order to rotate concentrically with the drill pipe axis. When reducing size of the hole or piloting ahead with small tools the new hole is centered with a diamond point or a guided pilot bit. A high degree of accuracy is maintained in measuring the weight on the bit and crooked drill pipe is discarded.

In addition to these precautions it is customary to check the hole at frequent intervals by means of acid bottles or special angle indicating and recording instruments. If the hole is found to be crooked it is usually plugged back and redrilled, or if the angle is small the hole may be straightened by slowly redrilling from the point of deviation with a bit and long heavy drill collar. A moderate speed is used and gravity pulls the bit to the lower side of the hole, a shoulder is formed and a new hole is started. Whipstocks may also be used.

Other items of interest are packing off or casingheads and christmas trees. At Kettleman Hills this equipment is tested to 5,000 pounds. Packing heads may be of the flange or slip type. At Kettleman Hills the christmas trees are designed to flow both inside and outside of tubing. The usual practice is two flow lines from 4 to 6 inches outside of tubing and four flow lines 3 to 6 inches, when flowing through tubing. The lines outside of the tubing are double-decked. All equipment is assembled in the shop and is tested to 6,000 pounds.

Deep Holes

This paper would hardly be complete unless mention were made of some deep holes. The first is the Shell Oil Co.'s No. 11 Nesa at Long Beach. This well was drilled with ordinary rotary equipment and the derrick was 122 feet high with a 24'x24' base. No particular effort was made to drill a record depth hole. The well was spudded November 23, 1928, and drilling was completed August 15, 1929, at 9,280 feet. No serious trouble was encountered while drilling the well and it was cored continuously from 7,614 feet to bottom. From 5,153 feet or where the 8⅝-inch casing was cemented 7⅝-inch hole was drilled to bottom. At 9,144 feet a string of 5¾-inch A.P.I., 22½-pound, Grade "D," 95,000-pound tensile strength casing was cemented with 150 sacks of high temperature cement. Down to 8,200 feet the drill pipe was 4½-inch A.P.I. 16½-pound, and from 8,200 to 9,280 feet 3½-inch A.P.I., 12.5-pound special drill was used.

The next interesting well is the Shell Oil Co.'s No. 1 Williams, a wildcat near Wasco. This well was also drilled with ordinary rotary equipment. Drilling was started May 7, 1930, and by March 13, 1931, a depth of 9,700 feet or the present bottom had been reached. This well was drilled with 5¾-inch A.P.I. 22½-pound, Grade "D" drill pipe and 4½-inch A.P.I. 16.5-pound, Grade "D" drill pipe. The well was cored from 1,600 feet to bottom. Acid bottles were run continuously while drilling the well and the maximum deviation was not over 2°. At 8,575 feet a water string of 5¾-inch was cemented. At present the well is tied up with a bad fishing job.

Our most recent record and probably the most spectacular is that of the North American Oil Co.'s No. 1 Blauvelt at Kettleman Hills. This well landed and cemented 459,884 pounds or 6,766 feet of 13⅜-inch A.P.I. 68-pound casing. This casing was landed inside of a 17½-inch hole and cemented with 850 sacks of cement. The casing was run in 18 hours and 45 minutes and the cementing job required 1 hour and 30 minutes. Two float valves were used in running the pipe and after cementing a stretch was taken of practically the entire weight of the string. This company intends to land 9-inch at approximately 8,400 feet.

SOUTHWEST TEXAS PROVEN AREAS

(Continued from Page 48)

United Prod. Co.'s No. 37 Ray, 3,200 ft. from SW line, 996 ft. from SE line of Willis A. Moore Sur. ..... T. D. 1,320 ft.; drlg.
United Prod. Co.'s No. 38 Ray, 900 ft. E, 10° S of No. 35 Ray ..... T. D. 3,974 ft.; drlg. plugs.

CARTWRIGHT POOL—LIVE OAK COUNTY

Houston Oil Co.'s No. 3 Dunning, M. B. Kilvin Sur. ..... Moving in rig.
Houston Oil Co.'s No. 4 B. L. and C. C. ..... T. D. 5,724 ft.; abnd.; dry.
Houston Oil Co.'s No. 23 Cartwright, 691 ft. N, 30° E of No. 11 ..... T. D. 595 ft.; drlg.

CHITTIM POOL—MAVERICK COUNTY

Texas Gas Utilities' No. 8 Chittim, 24 ft. S of No. 7 Chittim ..... T. D. 600 ft.; drlg.

AGUA DULCE FIELD—NUECES COUNTY

Houston Oil Co.'s No. 1-B Ollie Purl ..... T. D. 6,010 ft.; drlg.

SAXET FIELD—NUECES COUNTY

Gulf Coast Oil Co.'s No. 1 Maggie Harrall, 330 ft. from S and W lines of Blk. 32, Sec. 311 ..... T. D. 2,000 ft.; drlg.
Houston Oil Co.'s (Andy Bowen) No. 1 Prieur, H. B. Sheppard Sur. ..... T. D. 1,465 ft.; waiting for csg.
W. L. Pearson Properties' No. 1 Dunn, 300 ft. S of Bay.. Shut down 2,600 ft.
L. L. Smith's No. 1 Hunter, 150 ft. from S and W lines of N half of Hunter tract ..... T. D. 2,700 ft.; drlg.
Saxet Oil Co.'s No. 8 Dunn, 1,000 ft. N, 500 ft. W of No. 7 Dunn ..... T. D. 4,079 ft.; setting csg.

SCHOOLFIELD-O'BYRNE POOL—DUVAL COUNTY

Magnolia Pet. Co.'s No. 3 Wilson, 330 ft. from N, 1,720 ft. from W line of Sur. No. 134 ..... T. D. 2,385 ft.; comp. 600 bbls.
The Texas Company's No. 1 Bishop Duval Land Co., 330 ft. from S line, 1,520 ft. from W line, Sur. 135.. T. D. 2,383 ft.; comp. 125 bbls.

WHITE POINT FIELD—SAN PATRICIO COUNTY

Saxet Oil Co.'s No. 4 White Point ..... T. D. 4,953 ft.; set csg.; drlg. plug.

PRYOR FIELD—ZAVALA COUNTY

Texas Gas Utilities' No. 4 Pryor, 1,000 ft. NW of No. 3 Pryor ..... Location.

LAREDO DISTRICT

KOHLER POOL—DUVAL COUNTY

Humble Oil & Refining Co.'s No. 50 Kohler, 2,805 ft. from S line, 165 ft. from W line of Sur. 164 ..... T. D. 6,084 ft.; fishing.

COLE COUNTY—DUVAL COUNTY

Magnolia Pet. Co.'s No. 1 W. Benavides, 320 ft. from N and W lines, Sur. 172 ..... Rigging up.

JENNINGS-MUCKELROY POOL—ZAPATA COUNTY

Allied Oil & Gas Co. and Allen & Morris' No. 15 Guitierres, 2,317 ft. NE line, 200 ft. SE line of Share 4, Fansler Partition, Comitas grant ..... T. D. 1,460 ft.; coring.
E. C. Brogan's No. 1 Montemeyor, Blk. 11, Sur. 64 ..... T. D. 1,850 ft.; coring.
O. W. Killam's No. 7 Bustamente, 450 ft. from SE and SW lines of Blk. 7, Share 5, Comitas grant ..... T. D. 1,253 ft.; comp. 40 bbls.
O. W. Killam's No. 8 Bustamente, 715 ft. SE line, 622 ft. SW line, Blk. 7, Share 5, Fansler's Partition, Comitas grant ..... Rigging up.

CUELLAR POOL—ZAPATA COUNTY

O. W. Killam's No. 40-C Cuellar, Sur. No. 278 ..... Derrick.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 48)

Mauldin et al's No. 1 Kimball, 300 ft. S Grayburg's No. 1-A Kimball, S. Winship Sur. ..... T. D. 3,544 ft.; setting packer.

BEXAR COUNTY

Ingersoll-Miller's No. 1 E. B. Carruth in Francisco Rolen Sur. ..... T. D. 390 ft.; shut down.
John P. Camp's No. 1 Chevez, 12 miles S of San Antonio ..... Rigging up.
J. M. Russell's No. 1 P. L. Price, 1,500 ft. to N line, 660 ft. W of tract in Angel Navarro Sur. ..... T. D. 1,172 ft.; drlg.
Schneider, Rees et al's No. 2 Claussen, 12 miles NE of San Antonio ..... T. D. 702 ft.; shut down.

CALDWELL COUNTY

Mills et al's No. 1 McMahon, 275 ft. SW line, 75 ft. SE line of tract, J. Pinchback Sur. ..... T. D. 2,350 ft.; drlg.
M. O. Rayor's No. 1 Dunlap, 150 ft. NW and NE lines of farm, Solomon Seal Sur. ..... T. D. 2,368 ft.; hole lost; skidding rig.
R. R. Ogden's No. 1 O. S. Alexander, 1,300 ft. from N line, 150 ft. from E line of S. Spiller Sur. ..... T. D. 1,558 ft.; shut down for water.

COMAL COUNTY

Caldwell & Lanier's No. 1 T. J. Byler, 175 varas from W line, 370 varas from N line of 320-ac. tract in the H.E.&W.T. No. 5,894 Sur. ..... T. D. 698 ft.; shut down.

DEWITT COUNTY

Gibson & Sturm's No. 1 Clark, Dolores Alderete Sur. .... Rigging up.

DUVAL COUNTY

Coffee et al's No. 1 Jose Garza, center Sur. 49 ..... T. D. 825 ft.; standing.
Magnolia Pet. Co.'s No. 1 W. Benavides, 330 ft. N and W lines of Sur. No. 172 ..... T. D. 1,465 ft.; coring.
O'Byrne et al's No. 1 Well, B.S.&F. Sur. No. 568 ..... T. D. 1,830 ft.; repairing boiler.
S. J. Carpenter et al's No. 1 Juan Benavides, Blk. 38, Mesquite grant ..... T. D. 1,669 ft.; set csg.

FAYETTE COUNTY

Elam & Reynolds' No. 1 Florence, M. Muldoon Sur. No. 13 ..... T. D. 1,914 ft.; drlg.

FRIO COUNTY

A. H. Wray's No. 1 Burns estate, 700 ft. N, 330 ft. E of C Sec. 123, Antone Hupzor ..... T. D. 3,716 ft.; plugging back to shut off sulphur water.

GOLLIAD COUNTY

Gibson Oil Co.'s No. 1 Cyrus Parks, 3,000 ft. S and 2,500 ft. E of NW cor. of Parks ranch, Ferguson Sur. ..... T. D. 4,257 ft.; coring.

GUADALUPE COUNTY

Harry J. Bruner's No. 1 Jim Sherrill, 150 ft. N line, 1,360 ft. W line of tract, George Allen League .... Spudded in.
McGarrity et al's No. 1 A. Wesch, Jr., 150 ft. to N and E lines of farm, H. M. Thompson Sur. ..... T. D. 700 ft.; drlg.
Schleyer, Atherton and Armstrong's No. 1 Ogletree, Robert Smith Sur. ..... T. D. 1,417 ft.
Linne et al's No. 1 J. E. Linne, center 363-ac. tract in V. Cortario Sur. ..... Moving in tools.
San Antonio Oil & Royalty Co.'s No. 1 Dibrell, 150 ft. from N and W lines of Sec. 6, H.&T.C.R.R. Sur. ..... Location.

HAYS COUNTY

J. C. Jones et al's No. 1 Byder, John Ingram Sur. .... T. D. 830 ft.; trying to set csg. on bottom.

JIM HOGG COUNTY

Magnolia Pet. Co.'s No. 1 Cuellar, Sur. No. 575 ..... T. D. 4,000 ft.; drlg.
Peterman & Minahan's No. 1 Palacios, Sur. No. 231 .... T. D. 1,360 ft.; drlg.
D. C. DeWitt's No. 1 Teofilo Gomez, 1,170 ft. from N line, 150 ft. from W line of Sur. 12 ..... T. D. 200 ft.; drlg.

JIM WELLS COUNTY

Carall Oil & Gas Co.'s No. 2 McGill, 900 ft. due N of No. 1 in D. Baldwin Sur. ..... T. D. 3,004 ft.; shut down.
Gulf Production Co.'s No. 4 Schaeffer ..... Location.
Gulf Production Co.'s No. 3 Shaeffer, center of J. T. White Sur. ..... T. D. 2,851 ft.; abandoned.
Prairie Lee Prod. Co.'s No. 1 Oppenheimer ..... T. D. 1,000 ft.; shut down; waiting for heavier rig.
Smith Clark Co.'s No. 1 Cuero Cattle Co. ..... Location.

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur. ..... T. D. 1,165 ft.; shut down.
Sitton et al's No. 1 Garvin, C of NE of D. L. Richardson Sur., in the D. L. Richardson Sur., 1 mile NE from Kendalia ..... T. D. 1,420 ft.; waiting on cement.
Dixon Oil Co.'s No. 1 Ottmer Behr, W of H.T.&B.R.R.
Fred S. Dibble's No. 1 Ellebrach, Sur. 77, N part of county ..... Rigging up.
Sur., 3½ miles SE from Sisterdale ..... T. D. 2,600 ft.; drlg.
Hicks et al's No. 1 Speck & Wiedner, Thomas Sur. No. 27, 2 miles S of Twin Sisters ..... Location.
P. B. Sterling's No. 1 R. J. McCrocklin, 1,350 ft. from N line, 350 ft. from W line of the B. G. Owens Sur., 4 miles W from Kendalia ..... T. D. 1,600 ft.; shut down.
R. M. Perkins' No. 1 J. Lawhorn, Sec. 10, 2,475 ft. E line, 1,488 ft. S line ..... T. D. 600 ft.; abandoned.
Permian Oil Co.'s No. 1 Taylor, Sec. 18, G.B.&G. Sur. .. T. D. 1,814 ft.; fishing for bit.

KERR COUNTY

Herbert Oil Co.'s No. 1 J. D. Witt, 1,320 ft. N line, 1,220 ft. W line of Sec. 1,923, W. H. Hamilton Sur.. Location.
Evans & Gant's No. 1 Seiker-Mears, C.C.S.D.&R.G.N.G. Sur. No. 1,605 ..... T. D. 1,650 ft.; running 8-in. csg.
Evans & Gant's No. 1 E. Young, A. E. Burge Sur. No. 28 ..... Rigged up and shut down.
Evans & Gant's No. 2 Love, in Sur. 1,594, located 560 ft. S of S line of Sur. 1,597 ..... Building derrick.
Evans & Gant's No. 1 Jeff Love, 1,320 ft. from W line of Sur. 1,594 and 660 ft. S of S line of Sur. 1,597 ..... T. D. 3,391 ft.; to deepen.
B. M. Hatfield's No. 1 Westland, Blk. 23, Westland Subd. to Kerrville ..... T. D. 460 ft.; standing.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 7,700 ft. N and W lines of F. Lotta Sur. ..... T. D. 850 ft.; standing.
Kamon et al's No. 1 Hodges ..... T. D. 2,910 ft.; shut down.

LASALLE COUNTY

Fred W. Vales' No. 1 Coleman, 200 ft. from S and E lines of SW Sec. 514, B.S.&F. Sur. ..... T. D. 40 ft.; standing.

LIVE OAK COUNTY

Burke-Greis Oil Co.'s No. 1 West Ranch, James Vaughan Sur. ..... T. D. 450 ft.; set surface csg.
Illinois Exploration Synd.'s No. 1 Reeves-Brown, 1,300 ft. S of Sellers tract, 1,800 ft. E of Ry ..... T. D. 2,145 ft.; standing.
Sid Keoughan's No. 1 C. E. Terrell, 600 ft. from N line, 1,000 ft. from E line, Dan O'Boyle Sur. ..... T. D. 2,840 ft.; shut down.

LEE COUNTY

Burt et al's No. 1 R. C. Saunders, J. Maxmillan Sur. .... T. D. 3,414 ft.; shut down.
A. H. Wheeler and associates' No. 1 fee, Blk. 42, H. Donohue Sur. ..... T. D. 3,200 ft.; showing oil; will set csg.
C. B. Polk et al's No. 1 Stoltz, Hiram Donohue Sur. .... T. D. 1,758 ft.; fishing.

McLENNAN COUNTY

C. E. Groone et al's No. 1 League ..... T. D. 1,230 ft.; shut down.

McMULLEN COUNTY

Belt Pet., Inc.'s No. 1 Martin, 150 ft. NW line, 150 ft. to SW line of E. Melon No. 212 Sur. ..... T. D. 28 ft.; standing.
Camp and Stanolind's No. 1 Murphy, 1,845 ft. from W line, 165 ft. from N line, Sur. 123 ..... Drlg. water well.
Whall, Scherer et al's No. 1 Shiner, Henry Brewer Sur... T. D. 1,630 ft.; drlg.

MEDINA COUNTY

Donaldson Oil & Gas Co.'s No. 2 Adams ..... T. D. 130 ft.; standing.
J. H. Hickey's No. 1 Jungman, at N end Chicon Lake... T. D. 425 ft.; drlg.
Sunflower Oil Co.'s No. 1 Mofield, J. Brothag Sur. No. 532 ..... T. D. 1,775 ft.; drlg.
Yancey Development Co.'s No. 1 Fassler, Sur. No. 801.... T. D. 1,467 ft.; standing.

MILAM COUNTY

Dil-Tex Oil Corp.'s No. 1 Dilbeck, 450 ft. N and E lines of farm, Fernando Rodriguez Sur. ..... T. D. 798 ft.; drlg.
H. Elliott's No. 1 Kirkman, 150 ft. from NE lines of farm in M. Park Sur., NW from Gabriel ..... T. D. 1,050 ft.; drlg.
Rheubotham & Tate's No. 1 Johnson, 325 ft. from N line, 250 ft. from W line of 40-ac. tract, D. Robinson Sur. ..... T. D. 2,175 ft.; shut down.
Red Bank Oil Co.'s No. 1 Foster, A. G. Berry Sur. .... Derrick blown down.
McMasters and Pomeroy's No. 1 Pluger, J. J. Acosta Sur... T. D. 1,200 ft.; shut down.
J. E. McKee et al's No. 1 Littleton, 150 ft. from N and 225 ft. from W line of lease, C. Chevalier Sur. ..... T. D. 510 ft.; shut down.
Peggie Brothers' No. 1 M. Reed ..... T. D. 780 ft.; shut down.

REAL COUNTY

McGinley Corp.'s No. 1 Haby, C of SW Sec. 175 ..... T. D. 1,700 ft.; drlg.
Gant-Kilgore and Evans' No. 1 A. D. Auld, C.C.S.D.& R.G.N.G. Sur. No. 23 ..... T. D. 3,285 ft.; waiting on cmt.

STARR COUNTY

B. B. Tips' No. 1 F. Dayno, Lot 1, Porcion No. 81 ..... T. D. 332 ft.; waiting on cmt.
Menyard et al's No. 1 Sealbury, 150 ft. from E line, 6,550 ft. from N line, Share 5, Porcion 75, Jurisdiction of Carmargo ..... T. D. 411 ft.; tested dry.
Los Olmos Oil Co.'s No. 4 Kelsey-Bass, 2,208 ft. from W line, 60 ft. from N line, Blk. 7, Subd. Porcions 75, 76 and 77, Jurisdiction of Carmargo ..... T. D. 360 ft.; drlg.

SAN PATRICIO COUNTY

George E. Pickett's No. 1 Baldwin, 900 varas due E of Denton, 1,200 ft. S of the SE cor. of O'Neill Sur., Abstract 211 ..... T. D. 4,020 ft.; shut down.
Saxet Oil Co.'s No. 1 Carroll, 8 miles N of Gregory .... Derrick.

TRAVIS COUNTY

Fort Bend Oil Co.'s No. 1 Engleman, 450 ft. N line, 150 ft. W line of 108-ac. tract, J. H. Denson Sur. .... T. D. 2,100 ft.; shut down.
F. W. Fuchs' No. 1 Ballersted, A. Alexander Sur. ..... Derrick.
Franklin et al's No. 1 Wilson, A. Alexander Sur. ..... Derrick.
Marts et al's No. 1 Oswald ..... T. D. 1,100 ft.; shut down.
Ratcliffe et al's No. 1 Jim Jones, 1,000 ft. S line, 750 ft. E line of farm in Amos Alexander Sur. ..... T. D. 305 ft.; drlg.
Waldron et al's No. 1 Cook, D. H. Minor Sur., 8 miles SW of Austin ..... T. D. 645 ft.; drlg. shale.
Taylor Temple Oil Co.'s No. 1 Smith, L. Kimbro Sur.... T. D. 763 ft.; tested salt water.
Bohls & Wilson's No. 1 Norton, J. Cole Sur. ..... Derrick.

WEBB COUNTY

Cole Pet. Co.'s No. 4 Benavides, Sur. No. 1,601 ..... T. D. 1,760 ft.; drlg. gumbo.
Eugene Garner, Jr.'s No. 1 Billings, 411 ft. E line, 956 ft. N line of NW NE, Sur. 71 ..... Location.

WILLIAMSON COUNTY

Fritz Fuchs' No. 1 L. W. Fuchs, Cartwright Sur. ..... T. D. 2,231 ft.; trying to shut out water.
Wilburn et al's No. 1 Caroline Hurts, P. Coursey Sur. .... T. D. 1,327 ft.; shut down.
Wilson et al's No. 1 Walker ..... T. D. 2,260 ft.; shut down.

WILSON COUNTY

A. M. Blume's No. 1 Nickolson, C. Diaz Sur. ..... T. D. 460 ft.; drlg.
Stover & Wren's No. 1 John Ruess, 10,400 ft. from SW line, 2,300 ft. from NW line, O. A. Trevino Sur. No. 19 ..... T. D. 1,100 ft.; abandoned.

ZAPATA COUNTY

T. H. Ward's No. 1 Uribe, 150 ft. NW line, 150 ft. SW line, Blk. 8 Subd., Share 7, Partition No. 6, T. Uribe Partition of Jose V. Borrego Sur. ..... Rigged up and standing.
Benson Oil Co.'s No. 1 S. Vela, W cor. of Blk. 12, Sur. No. 259 ..... T. D. 1,921 ft.; drlg.
Bill Henry et al's No. 1 Gopher Trust estate, Borrego grant ..... T. D. 1,398 ft.; laying water line.
Penny Prod. Co.'s No. 1 Juan V. Cuellar, Jr., et al, 175 ft. NE line, 175 ft. SE line Poppas Subd., Porcion 33 and 34, Blk. 1, Sur. 2 ..... T. D. 2,635 ft.; reaming.
National Oil Co.'s No. 1 Zapata Trust Estate, 617 ft. NW line, 96 ft. NE line, Blk. 97, De Prom Subd., Porcion 6 ..... T. D. 690 ft.; drlg.
National Oil Co.'s No. 2 Adams, 150 ft. from NW line and SW line, Blk. 11, Borrego grant ..... T. D. 1,320 ft.; drlg.
Mackenzie & Talmadge's No. 1 Trevino, 400 ft. SE line, 200 ft. NE line, Blk. 6, Sur. No. 4, Porcion 2 and 3 ..... T. D. 520 ft.; standing.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 51)

Jordan Drlg. Co.'s No. 2 La. Long Leaf Lbr. Co., Sec. 3-7-11 ..... Began May 7; set 10-in. 103 ft; drlg. 1,400 ft.
Lyons & Neely's No. 2 Byrd, Sec. 1-7-11 ..... Rigging up.
L. K. McGuffin's No. 1 Bush, NW cor. NW SE, Sec. 1-7-11 ..... Location.
H. H. Alvord, Jr.'s No. 1 Sabine Lbr. Co., 200 ft. S, 175 ft. W, NE cor. SE NW, Sec. 11-7-12 ..... Dry and abd. 2,463 ft.
Ohio Oil Co.'s No. 8 Bowman-Hicks, 330 ft. N, 330 ft. E, NW cor. NE, Sec. 2-7-12 ..... Flowing 100 bbls. 2,480 ft.
Pelican Nat. Gas Co.'s No. 9 La. Long Leaf Lbr. Co., 990 ft. W, 655 ft. N, SE cor. SW SE, Sec. 3-7-11 .... Set 6-in. 2,363 ft.
George Pipes, tr.'s No. 1 Byrd, Sec. 1-7-11 ..... Derrick.
Sabine Royalties Co., Inc.'s No. 1 Hill, 400 ft. S, 200 ft. E, NW cor. NE NE, Sec. 5-7-11 ..... W.O.S.R. 2,506 ft.
Sabine Prod. Co.'s No. 3 Pearce, 858 ft. N, 536 ft. W, SE cor. SE NW, Sec. 10-7-11 ..... Began May 9; set 10-in. 100 ft; drlg. 500 ft.
Eddie Self's No. 1 Jacobs, Sec. 1-7-11 ..... Began May 10; set 10-in. 105 ft.
The Texas Co.'s No. 3 Stille, 330 ft. S, 338 ft. E, NW cor. SW, Sec. 33-8-11 ..... Flowing 1,100 bbls. through 7/32-in. choke 2,318 ft.
The Texas Co.'s No. 1 DeLatia et al, 1,070 ft. W, 990 ft. N, SE cor., Sec. 3-7-11 ..... Derrick.
Houston-Sabine Prod. Co.'s No. 1 Sabine Lbr. Co. (was Triangle Pet. Co.'s No. 2 Sabine Lbr. Co.), 330 ft. N and E, SW cor., Sec. 36-8-12 ..... Drlg. 1,950 ft.
J. C. Walton's No. 1 Sabine Lbr. Co., 300 ft. S, 300 ft. W, NE cor. NW, Sec. 11-7-12 ..... Tested 2,376 ft; S.O; W.O.

WEBSTER PARISH

Cassidy & Davis' No. 1 Nickerson, 300 ft. S, 300 ft. W, NE cor. SW, Sec. 29-22-10 ..... S.D. 150 ft.

ARKANSAS

OUACHITA COUNTY—STEPHENS

Wesson & Bonner's No. 1 Wesson, 500 ft. W, 175 ft. N, SE cor. SW NW, Sec. 22-15-19 ..... Pumping 3 bbls. oil, 2 bbls. wtr. 2,169 ft.

UNION COUNTY—EL DORADO

Lion O. & R. Co.'s No. 9-A G. P. Hayes, 242 ft. S, 246 ft. W, NE cor. Lot 5, NE, Sec. 4-16-15 ..... Drlg. hard sand with streaks of red beds 3,341 ft.
Rice Drlg. Co.'s No. 1 Watley, 150 ft. S, 150 ft. E, NW cor. SW, Sec. 7-17-15 ..... S.D. funds; T.D. 2,186 ft.
Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15 ..... S.D. 2,598 ft.

UNION COUNTY—URBANA

Marine Oil Co.'s No. 1 Winn est., 330 ft. S and E, NE cor. 8½ NW, Sec. 11-18-13 ..... Drlg. red beds 3,475 ft.
Marine Oil Co.'s No. 1 Union Sawmill Co., 330 ft. N and E, SW cor. SE SE, Sec. 3-18-13 ..... Drlg. lime rock 2,600 ft.
Marine Oil Co.'s No. 2-E Thompson, 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 10-18-13 ..... Location.

EAST TEXAS

HARRISON COUNTY

Calatex O. & G. Co.'s No. 6 Argus, 755 ft. N, 699 ft. W, Mile Post 27, in J. Womack Sur. ..... Location.

PAOLA COUNTY

Ark.-La. P. L. Co.'s No. 14 Werner, 341 ft. S, 209 ft. W, NE cor. Werner 74-ac. tr., Ben C. Jordon Sur. .. Derrick.
Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur. .... S.D. 2,600 ft.
Dillon & Bradham's (was W. G. Banks et al's) No. 1 C. O. Baldwin, 1,395 ft. W, 1,362 ft. S, NE cor. Baldwin 290 ac. in Hampton West Sur. ..... S.D. 1,555 ft.
S. E. Bell et al's No. 1 Burnett Lbr. Co., C, S. B. Hendricks Sur. ..... S.D; W.O. 2,325 ft.
C. D. Neff et al's No. 6 Brumbie, B. C. Jordan Sur. .... Derrick.
United Prod. Corp.'s No. 17 Steele, 1,320 ft. N, 660 ft. W, SE cor. C. D. Steele lease, in B. C. Jordan Sur.. Location.
United Prod. Corp.'s No. 10 Warner, 388 ft. N, 2,467 ft. W, SW cor. Thos. Cox Sur. in Ben Jordon Sur. .... Repairing rig 2,355 ft.
Southwestern O. & G. Co.'s No. 1 E. R. Vinson, 3,005 ft. S, 1,001 ft. W, NE cor. C. T. Anderson Sur. ..... Drlg. 2,650 ft.

MISSISSIPPI

HINDS COUNTY

Cleve Love et al's No. 2 Ridgeway-McGhee, SE cor. NW, Sec. 2-5-1e ..... Derrick.

RANKIN COUNTY

Miss. G. & F. Co.'s No. 1 Hanna, SW cor. SW NE, Sec. 14-5-1e ..... Derrick.

WILDCAT OPERATIONS IN MISSISSIPPI

CLARK COUNTY

Company, farm and location—	Remarks:
Gulf Ref. Co.'s No. 1 Box, 526 ft. W, 498 ft. N, C, SE, Sec. 11-2n-15e	S.D. 4,515 ft.

CLAY COUNTY
(Cable tools)

Ohio Oil Co.'s No. 1 Cantrell, NE cor., Sec. 16-15-5 ..... Drlg. 3,716 ft.

GRENADA COUNTY

Carter Oil Co. et al's No. 2 Dubard, NW cor., Sec. 18-22n-4e ..... Drlg. 2,085 ft.

HINDS COUNTY

Attkisson & Dyer's No. 1 Downing et al, SE NE, Sec. 27-6-1 ..... S.D. funds 1,845 ft.
Howard Oil Co.'s No. 1 Jackson College, C NW NW, Sec. 2-5-1e ..... S.D. 74 ft.
Industrial G. & E. Co.'s No. 1 Ill. Central R.R., 2,400 ft. E, 100 ft. S, C, Sec. 4-5n-1e ..... Waiting on csg. 2,463 ft.
Southern Pet. Co.'s No. 1 Wilson (was Tri-State O. & G. Co.'s), 330 ft. E, 240 ft. N, SW cor. SE NE, Sec. 28-6-1e ..... S.D. 20 ft; W.O.

JASPER COUNTY

Bay Springs Pet. Co.'s No. 1 Keys, C NW NE, Sec. 2-12-9 ..... S.D. fuel 1,505 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bouriand, Sec. 2-13-19 ..... S.D. 3,015 ft.
Park Bowser et al's No. 1 Cowart, second hole, Sec. 2-13-19 ..... Set 6-in. 2,190 ft.

RANKIN COUNTY

Attkisson & Dyer's No. 1 Valentour, 300 ft. S, 300 ft. E, NW cor., Sec. 18-5n-2e ..... Rigging up.
Grandstaff et al's No. 1 Carr, 2,780 ft. W, 550 ft. N, SE cor., Sec. 12-5n-1e ..... Drlg. 1,987 ft.
Harding & Flint's No. 1 Webb, center Lot 32, Blk. B, East Jackson Place, Jackson City Subd., Sec. 12-5-1. Began May 7; set 10-in. 120 ft; drlg. 173 ft.
R. A. Moore et al's No. 1 Interior Lbr. Co., Sec. 23-6-1e.. S.D. 900 ft.
Cleve Love's No. 1 Muse, SE cor. SW SW, Sec. 32-7-4e.. S.D. for fuel 3,737 ft.
Love Pet. Co.'s No. 1 Interior Lbr. Co., Sec. 28-6n-2e.... Abd. 867 ft.

SCOTT COUNTY

M. U. Culley et al's No. 1 Owens, Sec. 2-8-9 ..... Derrick.

WARREN COUNTY

Dixie Pet. Co.'s No. 1 Henry, 1,375 ft. W, 330 ft. N, SE cor. NE, Sec. 36-17-4, of Choctaw Div. on Lot 2.. Reaming to bottom 2,241 ft.
Eagle Bend O. & G. Co.'s No. 1 Kiger, SW cor. SW SE, Sec. 9-18-3 ..... Rigging up.

WINSTON COUNTY

Miss. Drlg. Co.'s No. 1 Sarbrough, NW cor., Sec. 15-12-14 ..... Drlg. 3,063 ft.

YALOBUSHA COUNTY

Collett-Carter Oil Co.'s No. 2 Blackmur, 990 ft. W, 265 ft. N, C, Sec. 14-11-4 ..... Reaming to bottom 3,063 ft.

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 46)

MORRIS COUNTY

Urschel et al's No. 1 Bersuch, NW SE NW Sec. 10-17-7 .. Machine.
Hankerson et al's No. 1 Cessman, SW SE Sec. 24-16-9 .... Shut down 2,210 ft.

NESS COUNTY

Gypsy Oil Co.'s No. 1 Coleman, C SW NE Sec. 25-17-25w.. Fishing 4,690 ft.

NORTON COUNTY

Richards et al's No. 1 Colby, Sec. 17-4-21w ..... Rig.

OSAGE COUNTY

Briggs & Smith's No. 1 Wood, SE NW Sec. 31-14-15 ..... Shut down 1,525 ft.
Fields' No. 1 Usker, SE cor. Sec. 35-16-17 ..... Shut down 400 ft.

RAWLINS COUNTY

J. G. Durham et al's No. 1 Weaver, SE cor. Sec. 3-2-35w ..... Drlg. 3,200 ft.

RICE COUNTY

Detrick & Langston's No. 1 Purcell, NW cor. Sec. 23-19-9w ..... Underreaming 12-in. csg. 1,265 ft.
McFadden and Shell's No. 1 Jennings, SW NE NW Sec. 29-18-6w ..... T. D. 1,450 ft.; plugging back to 1,130 ft.
Cress et al's No. 1 Sharp, SE NE Sec. 13-20-10w .. .. Show oil 3,107-15 ft.; Silicious 3,-330-36 ft.; estimated 1,500 bbls.; shut in.
Allison-Fitzwilliams' No. 1 Blake, NE NW Sec. 9-18-10w. Rig.

RENO COUNTY

Shell Continental's No. 1 Blake, SW SE SE Sec. 23-23-4w. Chat 3,267-3,308 ft.; 8,500,000 ft. gas; shut in.

ROOKS COUNTY

Empire Oil & Ref. Co.'s No. 1 Halsman, SW NE SE Sec. 17-7-20w ..... Shut down 2,885 ft.

RUSH COUNTY

Dewey & Mitchell's No. 1 Greenawalt, C SW Sec. 17-19-16w ..... Drlg. 2,670 ft.

RUSSELL COUNTY

Hall et al's No. 1 Mills, SE SW SE Sec. 30-14-13w .. .. Drlg. 2,720 ft.
Agate Oil & Gas Co.'s No. 1 Rochfellow, SE cor. Sec. 6-13-12w ..... Shut down 3,374 ft.
Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w ... Drlg. 3,058 ft.

SEDGWICK COUNTY

Buck et al's No. 1 McNananan, NE NW NW Sec. 2-29-1.. Shut down 2,440 ft.

SALINE COUNTY

Stanolind Oil & Gas Co.'s No. 1 Martin Com., NE SE SE Sec. 3-16-3w ..... T. D. 2,530 ft.; cleaning out.
Twin Mounds Oil Co.'s No. 1 Weis, C W half NE NW Sec. 20-13-4w ..... Shut down 2,700 ft.

SHERIDAN COUNTY

Flo et al's No. 1 Shoemaker, SE SW SW Sec. 27-7-26w .. Shut down 1,610 ft.

STAFFORD COUNTY

Rosenthal, Stanolind and Amerada's No. 1 Gray, C NE Sec. 11-24-13w ..... Drlg. 1,525 ft.

SUMNER COUNTY

Spencer et al's No. 1 Porter, NE SW Sec. 12-33-4w ..... Rig.
Otstot et al's No. 2 Marlow, C SE NW SE Sec. 22-33-3w .. Drlg. 1,360 ft.

WASHINGTON COUNTY

Sincox et al's No. 1 Penwell, NW SE NE Sec. 16-3-3 .... Shut down 1,720 ft.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 44)

KAY COUNTY

Wilwright Gas Co.'s No. 1 Wildegrube, NE SW Sec. 14-27-1 ..... Shut down 4,055 ft.
Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1 ..... Location.
Peters & Buckles' No. 1 Hayes, NW NE NW Sec. 24-28-3 ..... Drlg. 3,460 ft.
Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 9-27-2 ..... Cleaning out 3,693 ft.
Blackwell Oil Co.'s No. 1 Harshman, Sec. 2-26-1w ... Rig on ground.
Boucher Oil Co.'s No. 1 Jefferson, NE SW Sec. 32-26-1w.. Drlg. 4,683 ft.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 5-7-18w ..... Shut down 220 ft.

LATIMER COUNTY

Choctaw Gas' No. 1 Weaver, C NE NW Sec. 4-6-18 ..... Shut down 3,475 ft.
P. English's No. 1 Unknown, NW SE Sec. 16-6-19 ..... Shut down 1,542 ft.

LE FLORE COUNTY

Sooner Oil & Gas Co.'s No. 1 Peck, SE SW SE Sec. 22-7-26 ..... Drlg. 1,893 ft.

LINCOLN COUNTY

Mote-Wheeler's No. 1 Stafford, NW NE Sec. 32-17-4 .... Wilcox 4,535-51 ft.; water; shut down.

McINTOSH COUNTY

Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Drlg. 5,691 ft.

MURRAY COUNTY

C. R. Williams et al's No. 1 Williams, C NE NE Sec. 21-1-4 ..... Drlg. 570 ft.

MUSKOGEE COUNTY

H. E. Dowd's No. 1 Hembree, C NW NE Sec. 23-10-19 .. Drlg. 350 ft.
L. T. I. O.'s No. 1 Unknown, C SW NE Sec. 23-11-21 .... Sand 1,310-15 ft; T.D. 2,002 ft; abd.
Reboid's No. 1 Miller, SE NE NE Sec. 32-13-19 ..... Rig.
Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .... Shut down 1,011 ft.

OKFUSKEE COUNTY

E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10.. Shut down 3,690 ft.

OKLAHOMA COUNTY

Citizens Oil Co.'s No. 1 Sage Barber, NE cor. Sec. 21-11-3w ..... Shut down 1,200 ft.
L. C. Hivick's No. 1 Sunset Addition, NW SW NW Sec. 17-11-3w ..... Shut down 5,515 ft.
J. F. Cuniff, trustee's No. 1 Church Land, NE NW SE Sec. 17-12-4w ..... Shut down 6,700 ft.

PAWNEE COUNTY

Comar's No. 1 Babstick, SW SE SE Sec. 18-22-5 ..... Drlg. 2,570 ft.
Rookstool's No. 1 Wylie, NW NE SW Sec. 6-20-5 ..... Shut down 1,950 ft.
Sperry et al's No. 1 Mullrap, SE SW Sec. 3-22-5 ..... Drlg. 2,164 ft.
Cochran et al's No. 1 Green, NE cor. SW Sec. 15-23-5 .. Rig.

PITTSBURG COUNTY

J. Morrison's No. 1 Fowler, NE SE Sec. 13-7-17 ..... Rig.
C. Kennedy's No. 1 Travis, C SW NE Sec. 15-7-14 ..... Rig.
C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 ..... Rig.

POTTAWATOMIE COUNTY

Droppleman et al's No. 1 Jones, SE NW Sec. 21-8-3 .. Drlg. 4,775 ft.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW Sec. 23-12-24w ..... Drlg. 4,720 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Fishing 2,956 ft.

SEMINOLE COUNTY

Sunray Oil Co.'s No. 1 Sunray, NW SE Sec. 35-5-5 ..... Location.

STEPHENS COUNTY

Ross Southerd's No. 1 McKinney, NE cor. Sec. 25-1-8w .. Shut down 1,062 ft.

WASHITA COUNTY

Cooper & Terhune's No. 1 Blocker, NW cor. Sec. 29-8-19w. Drlg. 1,854 ft.
Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 ..... Shut down 1,050 ft.
Petroleum Holdings, Inc.'s No. 1 Music, NW cor. Sec. 10-9-20w ..... Shut down 280 ft.

WOODWARD COUNTY

Prairie Oil & Gas Co. et al's No. 1 Wilbur, NE cor. NW Sec. 22-23-17w ..... Abandoned 7,445 ft.

OKLAHOMA PANHANDLE

TEXAS COUNTY

Western Prod. Co.'s No. 1 Gable, C NE Sec. 24-4-13 ..... Location.
Three Way Oil Co.'s No. 1 Crane, SW NW Sec. 11-1-13 .. Shut down 4,695 ft.

Palo Alto Oil Co.'s No. 1 Graves, NE SW SW Sec. 23-2-18e ..... Abandoned 50 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

R. P. Whelan et al's No. 1 Howard, NW SE NW Sec. 6-4s-11 ..... Drlg. 300 ft.

Brookshire's No. 1 R. W. Rowland, NW NE SE Sec. 18-3s-10 ..... Shut down 400 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW Sec. 7-7-10.. T. D. 650 ft.

Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 ..... Shut down 714 ft.

Johnson et al's No. 1 Ussery, SE SW SE Sec. 14-18s-7e .. Abandoned 485 ft.

JEFFERSON COUNTY

Smith's No. 1 McCarty, SE NW NE Sec. 15-4s-8w .. .. Location.

C. V. Chenault et al's No. 1 Grogan, SW NE SE Sec. 15-7s-6w ..... Drlg. 1,025 ft.

LOVE COUNTY

Batson & Sterrette's No. 1 Dillard, SE NE NW Sec. 25-6s-3 ..... Show 5 bbls. 1,585-96 ft.; T. D. 4,433 ft.; P. B. to 1,604 ft.; pumping.

Holmes et al's No. 1 Flannigan, NW cor. Sec. 2-8s-1 .... Rig.

McCURTAIN COUNTY

The Oil Journal's No. 1 Parks, C NE NW Sec. 9-6s-23 .. Rig.

Stewart's No. 1 Patterson, C SE SE Sec. 7-6s-24 ..... T. D. 300 ft.; underreaming.

MARSHALL COUNTY

McCrory et al's No. 1 Little, NW SW Sec. 30-7s-6 ..... Shut down 497 ft.; showing oil; recementing; W.O.C.S.

D. H. Curry's No. 1 Ward, NE SE SW Sec. 15-5s-6 ..... Drlg. 2,130 ft.

STEPHENS COUNTY

Obermyer et al's No. 1 Skelton, NE SW SW Sec. 32-1S-7w ..... Abandoned 1,582 ft.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 50)

The Texas Company's No. 4 Wilburn (D.D.), Henry Griffith League, approximately 1,700 ft. from W line and 50 ft. from S line of tract ..... Tested salt water 5,292 ft.; pulled screen to deepen.

The Texas Company's No. 6 Wilburn, Henry Griffith League, 250 ft. W of No. 4 and 50 ft. from S line of lease ..... Drlg. gumbo 435 ft.

Yount Lee Oil Co.'s No. 9 Chambers (D.D.), Wm. Bloodgood Sur., 550 ft. from N line and 1,660 ft. from W line of tract ..... Drlg. shale and lime 5,082 ft.

Yount Lee Oil Co.'s No. 3 Winfree, W. D. Smith Sur., 100 ft. out of NE cor. of tract ..... Drlg. hard sand 3,700 ft.

RACCOON BEND—AUSTIN COUNTY

Humble & Valley's No. 1 Martha Remmert ..... Location.

HUMBLE—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 2 H.E.&W.T., Adams Sur., 250 ft. N along railroad tract from No. 1 and 25 ft. W from center of said tract ..... Drlg. sandy shale 3,631 ft.

Rio Bravo Oil Co.'s No. 1 Westheimer, John Brown Jones One-Third League, 300 ft. from E line and 100 ft. from S line of Blk. 1, in Lot 48, Westheimer Subd. ..... Location.

Sun Oil Co.'s No. 16 Bender, Adams Sur., Bender South Addition, 110 ft. N of N line of H.E.&W.T. 150-ft. right of way and 75 ft. E of center line of right of way ..... Drlg. shale 4,220 ft.

Sun Oil Co.'s No. 22 Bender, Adams Sur., 200 ft. NE at right angles from midway point on line between Nos. 3 and 20 ..... Abandoned in shale 4,564 ft.

Sun Oil Co.'s No. 23 Bender, Adams Sur., 300 ft. NW of No. 21 in line with Nos. 21 and 15 ..... Sand and shale showing oil 4,807 ft.; cmtd. 7-in. csg. 4,740 ft.

Sun Oil Co.'s No. 24 Bender, W. B. Adams Sur., 24 ft. N of Rio Bravo's No. 2 H.E.&W.T. on Sun's east line ..... Drlg. gumbo 1,100 ft.

Sun Oil Co.'s No. 1 O'Connor, Adams Sur., 75 ft. from S line and 75 ft. from E line of 1-acre tract by S.P. depot ..... Drlg. shale and lime 3,036 ft.

Trapshooter Oil Co.'s No. 2 Rosenbaum ..... Standing 4,067 ft.

PIERCE JUNCTION—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 14-A Settegast (workover) ..... Drlg. sandy shale 5,235 ft.

Rio Bravo Oil Co.'s No. 21-A Settegast, J. Kopman Sur., 400 ft. S and 200 ft. N of NE cor. "A" lease.... Sand showing oil 4,255 ft.; drlg. plug.

Rio Bravo Oil Co.'s No. 102 G.H.&S.A. (D.D.), 875 ft. W of point where C line of railroad crosses line of B.B.B.&C. Sur. ..... Total depth 4,441 ft.; sidetracking in sandy shale 4,321 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 13 Mayes, B.B.B.&C. Sur. No. 4, 75 ft. W and 700 ft. S of NE cor. of survey..... Drlg. sticky shale 4,013 ft.

SPINDLETOP—JEFFERSON COUNTY

Gulf Production Co.'s No. 7 Mann (D.D.), John Douthit Sur. ..... Sand showing oil 3,768-83 ft.; set 1 jt. 4½-in. screen; bailed salt water; pulling screen and tubing.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 20 Cade ..... Rig standing.

Yount Lee Oil Co.'s No. 21 Cade, Fitzsimmons Sur., 150 ft. W of No. 17 ..... Drlg. shale and lime 3,050 ft.

NORTH DAYTON—LIBERTY COUNTY

M. L. Gray's No. 1 Schindler, H.E.&W.T. Sur. No. 120, 100 ft. E and 250 ft. N of SW cor. of sur. ..... No report.

Harrison-Abercrombie's No. 2 Jones, E.&T.C. Sur. No. 125, 50 ft. from N line and 450 ft. from E line of tract ..... Drlg. gumbo 2,020 ft.

ORCHARD—FORT BEND COUNTY

Gulf Production Co.'s No. 29 Moore, John Frazier Sur., 600 ft. N of 26 in line with Nos. 23 and 26..... Drlg. rock 3,587 ft.

DAMON MOUND—BRAZORIA COUNTY

D. C. Wellock's No. 1 Hamon, John P. Mills Sur., 1,115 ft. NE line and 60 ft. W line Blk. 1 ..... Shut down 240 ft.

ALLEN—BRAZORIA COUNTY

Mills Bennett Production Co.'s No. 1 Allen (workover), J. G. McNeal Sur., 1,211 ft. from W line and 2,569 ft. from N line of survey ..... Shale 5,276 ft.; drill pipe stuck.

Mills Bennett Prod. Co.'s No. 1 Poole, T. & W. Alley League, 1,396 ft. from E line and 100 ft. from S line (workover) ..... Heaving shale 4,902 ft.; drlg. sidetracked hole in shale 4,433 ft.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds' No. 7 Davis, David Kokernot Sur., 100 ft. S of No. 4 ..... Drlg. shale and lime 4,776 ft.

Cranfill-Reynolds Oil Co.'s No. 1-C Kirby fee ..... Fishing stuck drill stem 5,025 ft.

Cranfill-Reynolds Oil Co.'s No. 2 Moore's Bluff (workover) ..... Total depth 3,629 ft.; drlg. sidetracked hole 2,297 ft.

BLUE RIDGE—FORT BEND COUNTY

Telschow, Cady et al's No. 5 Blakely, E. Drew Sur., 90 ft. E. 150 ft. S of NW cor. of E half, Lot 4, Blk. F... No report.

RANKAMER—LIBERTY COUNTY

Gulf Production Co.'s No. 13 Boyt, H.&T.C. Sur. No. 22, 500 ft. N of No. 1 in line with Nos. 6 and 11..... Sand and shale showing oil 3,816 ft.; cem. 9⅝-in. casing 3,765 ft.; drilled plug and set 2 joints screen; comp. flowing 1,500 bbls. daily.

Gulf Production Co.'s No. 14 Boyt, H.&T.C. Sur. No. 22, 500 ft. N of No. 10 ..... Rig.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 115-A Cotton ..... Set screen 475 ft.; bailing.

MOSS BLUFF—LIBERTY AND CHAMBERS COUNTIES

Humble Oil & Ref. Co.'s No. 2 Sergeant, east flank..... Standing 5,931 ft.

Humble Oil & Ref. Co.'s No. 7 Sterling, J. McFaddin Sur., 350 ft. S and 100 ft. W No. 6 Sterling..... Sand and shale showing oil 5,976 ft.; cem. casing to test.

Texas Gulf Sulphur Co.'s No. 1 V. R. McManus, B. M. Spinks Sur., 300 ft. S and 100 ft. W of NE cor. 125-acre tract ..... Sulphur test.

Texas Gulf Sulphur Co.'s No. 1 D. J. Harrison, B. M. Spinks Sur., 1,694 ft. N and 1,300 ft. E of SW cor. 485-acre tract ..... Sulphur test.

REFUGIO—REFUGIO COUNTY

Houston Oil Co.'s No. 10 Wilson Heard, Refugio town tract, 150 ft. from N line and 150 ft. from E line of S 50-acre tract ..... Spudded.

Houston Oil Co.'s No. 5 Mrs. M. H. Ryals, Refugio Town Tract, 150 ft. from N line of tract and 527 ft. east of No. 1 ..... Drlg. shale 2,196 ft.

Houston Oil Co.'s No. 6 Pratt-Hewit-Rooke (D.D.), Thos. Mullen Sur., 1,150 ft. N and 200 ft. W of SE cor. of tract ..... Total depth 3,708 ft.; sidetracking at 2,518 ft.

Larco Oil & Gas Co.'s No. 1 Strauch, C Lot 13, Blk. 2 ... Oil sand 3,671-95 ft.; cem. 5 3/16-in. casing 3,695 ft.

Mission Drilling Co.'s No. 2 Moss-Powers, C, Blk. 109, townsite ..... Total depth 6,502 ft.; showing salt water; plugged to 6,400 ft.

Mission Drilling Co.'s No. 2 J. J. O'Brien, Refugio town tract, 150 ft. from E line and 150 ft. from S line 12½-acre tract ..... Rig.

Moody-Seagraves Prod. Co.'s No. 6 Morgan-O'Connor .... Total depth 6,470 ft.; plugged to 6,431 ft.; tested salt water; milling out 6,306 ft. to sidetrack.

Moody-Seagraves Prod. Co.'s No. 8 O'Connor, Refugio Town Tract, 350 ft. east of No. 1 and 150 ft. from S line of lease ..... Coring oil sand 6,444 ft.

Moody-Seagraves Prod. Co.'s No. 2-A J. F. B. Heard.... Rig standing.

Moody-Seagraves Prod. Co.'s No. 1 Shelly..... Total depth 6,467 ft.; plugged to sand 6,450-54 ft.; set 1 jt. screen and 20 ft. blank; comp. flowing 100 bbls. pipe line oil.

Pearson Properties' No. 5 Ryals, 174 ft. from S line of lease and 475 ft. E of No. 3 ..... Rig.

Ed Price's No. 3 Mission River, Refugio Town Tract, 750 ft. up river from No. 2 on S bank of river..... Shut down 350 ft.

United Prod. Corp.'s No. 1-A Fox, L. Brown Sur., 750 ft. W along S line from SE cor. of lease and 1,000 ft. N of said line ..... Sand showing oil 5,880-86 ft.; cmtd. 5½-in. (O.D.) csg. 5,877 ft.; drlg. plug and set 15¼-ft. screen; comp. flowing 30 bbls. hourly.

United Production Corp.'s No. 6 O'Brien, 150 ft. from S line of tract, 350 ft. W No. 3 ..... Drlg. gumbo 1,638 ft.

United Prod. Corp.'s No. 9 O'Brien, 150 ft. S of S line and 175 ft. E of extended W line of Moody-Seagraves' O'Brien "B" lease ..... Sand showing oil 6,451-62 ft.; cem. 7-in. (O.D.) 6,450 ft.; drilled plug to test.

United Prod. Corp.'s No. 6 Power, S Blk. 83, Refugio Townsite ..... Sand showing oil 6,450-56 ft.; cem. 7-in. casing 6,448 ft.; drilled plug to test.

United Production Co.'s No. 3 Mitchell, 150 ft. from N line and 609 ft. from W line of tract ..... Total depth 6,458 ft.; plugged to 6,445 ft.; showed salt water; to plug back.

United Production Corp.'s No. 6 A. W. J. Heard, Refugio town tract, 1,253.6 ft. from W line and 257 ft. from S line of tract ..... Sand showing oil 3,665-72 ft.; cem. 9-in. (O.D.) casing 3,662 ft.; drilled plug; comp. flowing 24 bbls. net oil daily, 750 lbs. pressure, ¾-in. choke on casing, 800 lbs. on casing, open line.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co.'s No. 31 Miller (D.D.), 360 ft. from N line and 900 ft. from W line of SW NE, Sec. 8-10s-9w ..... Sand showing oil 5,283 ft.; set screen to test.

Vacuum Oil Co.'s No. 7 State, 319 ft. N and 260 ft. W SE cor. NE, Sec. 8-10s-9w ..... Pulling screen to deepen 6,567 ft.

Yount Lee Oil Co.'s No. 2 Miller, 125 ft. N and 120 ft. W, SE cor. NE NW, Sec. 8-10s-9w ..... Drlg. gumbo 5,630 ft.

EDGERLY—CALCASIEU PARISH

Rex Pet. Co.'s No. 2 Prairie Narroni, Sec. 21-9s-11w, 365 ft. from S line and 50 ft. from E line of lease..... Deepened to salt 4,143 ft.; temporarily abandoned.

HACKBERRY—CAMERON PARISH

R. E. Seiss' No. 2 J. M. Vincent ..... Total depth in rock 2,042 ft.; waiting casing to set on sand 1,965-95 ft.

The Texas Company's No. 8 State ..... Derrick.
Yount Lee Oil Co.'s No. 34 State ..... Location.
Yount Lee Oil Co.'s No. 36 State ..... Location.
Yount Lee Oil Co.'s No. 37 State ..... Location.
Yount Lee Oil Co.'s No. 38 State ..... Location.
Yount Lee Oil Co.'s No. 39 State ..... Location.

VINTON—CALCASIEU PARISH

Vinton Pet. Co.'s No. 11 Matilda Gray (20 acres), 608 ft. from S line and 195 ft. from E line of tract in Sec. 33-10s-12w ..... Set 15 ft. 4½-in. screen 3,467 ft.; comp. flowing 125 bbls. fluid, 7 per cent b.s. and water.

Vinton Pet. Co.'s (Lucky Ten) No. 1 Lizzo ..... Drlg. gumbo 3,374 ft.

BAYOU BOUILLON—ST. MARTIN PARISH

Humble Oil & Ref. Co.'s No. 4 State ..... Shut down 5,246 ft.

SWEET LAKE—CAMERON PARISH

Magnolia Pet. Co.'s No. 2 Sweet Lake, Sec. 5-13s-7w..... Clean'ng up after fire; total depth 4,876 ft.

Pure Oil Co.'s No. 10 Yount Lee..... Sand showing oil 7,366-87 ft.; drilled plug and set 25 ft. of 4-in. (O.D.)screen; comp. flowing 1,217 bbls. first 24 hrs. on ⅝-in. choke, 900 lbs. on casing and 550 lbs. on tubing, gravity 28.5 deg. (corrected); temp. 104°.

STARKS—CALCASIEU PARISH

Gulf Refining Co.'s No. 27 Lutcher-Moore, Sec. 19-9s-12w. Sand 1,215-28 ft.; rigging up to pump.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 762 fee (workover) ..... Salt 5,864-9,250 ft.; plugged to sand 4,964 ft.; sidetracked to sand 5,064--72 ft.; cem. casing.

Union Sulphur Co.'s No. 765 fee, Sec. 29-9s-10w..... Drlg. salt 4,489 ft.

Union Sulphur Co.'s No. 766 fee, Sec. 29-9s-10w..... Oil sand 4,954-67 ft.; cmtd. 6⅝-in. casing 4,954 ft.; drilled plug and set 23⅝ ft. 4½-in. screen; comp. flowing 1,500 bbls. daily, 440 lbs. pressure, ½-in. choke, 29.9 gravity.

Union Sulphur Co.'s No. 767 fee, 328 ft. E and 180 ft. N of C Sec. 29-9s-10w ..... Rigging up.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Empire Gas & Fuel Co.'s No. 1 Kuntze, San Felipe..... Drlg. shale 7,015 ft.
O'Hara et al's No. 1 Schrader ..... Drlg. sticky shale 3,875 ft.
Parmerson & Cafferkey et al's No. 1 W. M. Schlecte, John Fitzgibbons Sur., 1,350 ft. from SE line and 3,100 ft. from NE line of survey ..... Drlg. shale 1,050 ft.

BRAZORIA COUNTY

Amerada Pet. Corp.'s (Rycade) No. 3 Seaburn, Stratton Ridge ..... Heaving shale 7,624 ft.; aband.
The Texas Company's No. 1 Belcher, Manvel, 167 ft. SE of NW line and 223 ft. NE of SW line, Lot 18, Blk. A, Suburban Gardens Subd. ..... Drlg. 540 ft.
United Oil Syndicate's No. 1 Speer, A. A. Talmadge Sur... Set 48 ft. 4½-in. screen 1,866 ft.; bailed salt water.

BURLESON COUNTY

Mid-South Oil Co.'s No. 1 Duckworth ..... Shut down 2,646 ft.
Reynolds Oil Co.'s No. 1 Harris, 500 ft. from W line and 400 ft. from N line of J. M. McKean Sur..... Shut down 400 ft.

CALHOUN COUNTY

The Texas Company's No. 1 Smith, J. Timmins Sur., Will Mousin and Driscoll Subd. ..... Drlg. sticky shale 5,155 ft.

COLORADO COUNTY

United North & South Oil Co.'s No. 1 H. P. Lockwood, 3,100 ft. S line and 2,000 ft. W line J. R. Johnson Sur. ..... Drlg. sandy shale 4,216 ft.

FORT BEND COUNTY

H. R. Cullen's No. 1 Lockwood, John Rabb Sur., 475 varas from W line of E half of survey and 1,245 ft. from N line ..... Sand showing oil 3,023 ft.; to set 9⅝-in. casing 3,010 ft.; shut down for repairs.

HARRIS COUNTY

Cypress Oil & Development Co.'s No. 1 C. Fritz, 500 ft. from N line and 500 ft. from E line of J. Duckworth Sur. ..... Rock 428 ft.; reported showing sulphur.
Humble Oil & Ref. Co.'s No. 5 Minnetex, Mykawa, 150 ft. from S line and 200 ft. from W line, Lot 261, Wm. Lovett Sur. ..... Location.
Humble Oil & Ref. Co.'s No. 6 Minnetex, Mykawa, Wm. Lovett Sur., C of Lot 254 ..... Drlg. sandy shale 4,240 ft.

JACKSON COUNTY

Chicago-Gulf Co.'s No. 1 Rogers (workover) ..... No report.

JEFFERSON COUNTY

Humble Oil & Ref. Co.'s No. 1 McFaddin, T.&N.O. Sur. 234 ..... Shut down for repairs 7,635 ft.
The Texas Company's No. 4 Pipkin, Big Hill ..... Heaving shale 5,903 ft.

LIBERTY COUNTY

Hamm et al's No. 1 Harvard, Davis Hill ..... Gumbo 1,015 ft.; shut down.
Tucker et al's No. 1 Bell, H.&T.C. Sur. No. 4 ..... Gumbo 560 ft.; shut down.

MATAGORDA COUNTY

H. C. Cockburn's No. 3 Hawkins, Shepherds Mott, 4,810 ft. SE along SW line of Farnum Fry Sur., thence 342 ft. NE at right angles ..... Total depth 6,295 ft.; sidetracking
Empire Gas & Fuel Co.'s No. 1 Boker, Citrus Grove..... Drlg. shale 964 ft. in hard sand 6,226 ft.

MONTGOMERY COUNTY

Mike Hogg's (Lake Creek Oil Co.'s) No. 1 Hunt, south of Conroe ..... Cem. 10¾-in. casing 1,100 ft.
H. W. Lowrie, Jr.'s No. 1 Groggan (G. J. Sunday), Cyrus Wickerson Sur. ..... Derrick.
Price & Wilhite's No. 2 Juerges ..... Drlg. hard sand 3,980 ft.

ORANGE COUNTY

Altex Oil Co.'s (Veteran Oil Co.) No. 1 Reed, A. Nelson Sur. No. 1, 500 ft. from N line and 250 ft. from E line of tract ..... Formerly temporarily abnd. 4,603 ft.; sidetracked hole 1,200 ft.; drilled to 1,820 ft.; shut down.
Crew Oil Co.'s No. 1 Mansfield ..... Shut down 1,460 ft.

POLK COUNTY

Freeman et al's No. 2 Freeman ..... Shut down 2,981 ft.

REFUGIO COUNTY

Blanco Creek Oil Co.'s No. 1 Damaan, 150 ft. from N line and 150 ft. from W line of Blk. 16, Bonnie View Ranch Subd. ..... Shut down in gumbo 4,014 ft.
Humble Oil & Ref. Co.'s No. 1 O'Connor, John Keating Sur., 6,012 ft. S from NE cor. along SE line of Lon T. Rios Sur., thence 7,375 ft. W at right angles in John Keating Sur. ..... Location.

SAN JACINTO COUNTY

E. P. Edward et al's No. 1 Bennett, northwest of Cold Springs ..... Spudded and shut down.

TYLER COUNTY

King Oil Co.'s No. 1 Caswell ..... Sand and shale showing oil 1,355 ft.; cmtd. 6-in. csg. 1,218 ft.
Allied Pet. Co.'s (Texas Southern Pet. Co.'s) No. 2 Wilson, Mrs. E. Cherry Sur. No. 798, 1,500 varas from W line and 600 varas from N line ..... Shut down 4,875 ft.
Lew Wentz' No. 1 Long Bell, 800 varas E and 100 varas N from SW cor. James Seals Sur. ..... Aband. in sand and shale 4,205 ft.

VICTORIA COUNTY

Houston Oil Co.'s No. 1 Conrad, T.&N.O. Sur. No. 1, 1,100 ft. from SW line and 100 ft. from NW line..... Rig.
Newton et al's No. 1 West ..... Shut down 1,550 ft.
Simpson-Fell and Westheimer et al's No. 1 Levi, 2,300 ft. from SW line and 3,000 ft. from NW line of S.A.&M.G. Sur. No. 4 ..... Coring sand 2,847 ft.
T. B. Slick estate's No. 1 McFaddin, J. Valran Sur., 17,700 ft. NE along SE line from S cor. of survey and thence 5,050 ft. NW at right angles ..... Drlg. shale 3,004 ft.
United Prod. Corp.'s No. 4-A McFaddin, M. Travieso Sur., 1,320 ft. W along N line of C. L. Mann Sur. from NE cor. and 1,980 ft. N at right angles..... Spudded.

WASHINGTON COUNTY

Joe Baker et al's No. 1 Kramer, Brenham, 600 ft. S and 300 ft. W NE cor. 92 acres ..... Drlg. shale 1,050 ft.
Penn-Tex Oil Co.'s No. 2 Kamas Brenham, S. M. Williams Sur. ..... Drlg. shale 2,950 ft.

WHARTON COUNTY

H. H. Givens' No. 3 Hudgins, I. B. Phillips Sur., 19 ft. W of No. 2 ..... Fishing drill stem 1,480 ft.
Poole & Chappell's No. 1 Lee, G.H.&H. R.R. Sur., Sec. 20, 75 ft. E and 25 ft. N from SW cor., Sec. 20 .... Rig.

SOUTH LOUISIANA

BEAUREGARD PARISH

Beauregard Gas & Oil Co.'s No. 1 J. E. Cochran, 400 ft. S and 700 ft. W from NE cor., Sec. 34-4s-12w..... Drlg. gumbo 2,350. ft.

CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w..... Shut down 875 ft.
J. O. Davis' No. 1 Industrial, Sec. 29-9s-10w..... Set 6⅝-in. csg. with 172 ft. 6⅝-in. screen on bottom 6,568 ft.; drilled plug and bailed dry; standing.
Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w ..... Shut down 3,258 ft.
Dr. Thomas et al's No. 1 John Hewitt ..... Location.
Vacuum Oil Co.'s No. 1 Walt (D.D.), 225 ft. out of SE cor., Sec. 12-9s-7w ..... Drlg. shale 5,705 ft.

CAMERON PARISH

Vacuum Oil Co.'s No. 2 Cameron Meadows, 3,120 ft. S and 1,900 ft. W from NE cor., Sec. 21-14s-9w (500 ft. S No. 1) ..... Drlg. rock 2,753 ft.
The Texas Company's No. 7 State, Calcasieu Lake..... Location.

IBERIA PARISH

Jefferson Lake Oil Co.'s No. 11 Lake Peigneur, Jefferson Island ..... Shut down 869 ft.
Jefferson Lake Oil Co.'s No. 12 Lake Peigneur, 3,100 ft. due W NE cor. Sec. 58-12s-5e ..... Location.

IBERVILLE PARISH

Standard Oil Co.'s No. 1 Gay, Bayou Choctou ..... Coring sand showing oil 4,190 ft.
Standard Oil Co.'s No. 7 Wilbert, Bayou Blue..... Derrick.
Standard Oil Co.'s No. 6 Schwing, Bayou Blue, Sec. 73-9s-11e, 317 ft. S of No. 2 ..... Drlg. sand and gravel 200 ft.
Standard Oil Co.'s No. 9 Wilbert, Bayou Des Glaise, 700 ft. E and 760 ft. N of SW cor. SE SW, Sec. 73-8s-8e.. Drlg. 3,401 ft.

JEFFERSON DAVIS PARISH

A. V. Peters' No. 1 Smith Subd., Welsh, 1,050 ft. N and 180 ft. E SW cor., Sec. 22-9s-5w ..... Running tubing 1,160 ft.

PLAQUEMINES PARISH

Humble Oil & Ref. Co.'s No. 4 Cockrell-Moran, Sec. 14-20s-26e, 1,905 ft. S and 2,860 ft. E of station..... Rig.

TERREBONNE PARISH

The Texas Company's No. 6 State, Caillou Island ..... Sticky shale 4,486 ft.; reaming.
The Texas Company's No. 1 La.L.&E., Bay St. Elaine .. Hard sand and lime 4,751 ft.; drill stem stuck.
The Texas Company's No. 4 State, Dog Lake ..... Drlg. sand 3,367 ft.
The Texas Company's No. 2 La.L.&E., Bay Junop ..... Location.
The Texas Company's No. 4 La.L.&E., Bay Junop ..... Location.
The Texas Company's No. 6 State, Lake Barre ..... Drlg. shale and gumbo 3,000 ft.
The Texas Company's No. 10 State, Lake Barre ..... Location.
The Texas Company's No. 11 State, Lake Barre ..... Driving piling.
The Texas Company's No. 12 State, Lake Barre ..... Location.
The Texas Company's No. 13 State, Lake Barre ..... Drlg. gumbo 1,206 ft.
The Texas Company's No. 14 State, Lake Barre ..... Location.

VERMILLION PARISH

Pure Oil Co.'s No. 1 Alliance Land, Sec. 34-11s-1w, 2,600 ft. N and 300 ft. E of SW cor. section..... Drlg. sticky shale 1,257 ft.

WEST FELICIANA PARISH

Putnam Syndicate's No. 2 Como Plantation, Sec. 51-1s-4w. Drlg. gumbo 1,510 ft.

OKLAHOMA FIELDS

(Continued from Page 44)

at 3,185-3,212 feet that swabbed 50 bbls. The test will be drilled to the Wilcox sand. Mummert Drilling Co.'s No. 1 McCormick, C NW SE Section 9-27-2, a wildcat in Kay County, found the chat at 3,675-90 feet and was shut down at 3,695 feet.

In Madill Shallow Area

In the southern part of the State in the shallow area in Marshall County, the McCrory and McCrory's No. 1 Little, NW cor. SW, Section 30-7s-6, was put on the pump and made 45 bbls. in nine hours. The test found oil in sand at 490-94 feet. Same operators have made another location a half mile northwest of the producer for No. 1 Whitworth, SW cor. SE, Section 24-7s-5, Hudson and Harrell's No. 1 Williams, SW cor. SE NE, Section 24-7s-5, is a new location about a mile northwest of the new well, which was rigging up.

Other operations in the county are: D. H. Curry and others' No. 1 Ward, NW cor. SW SE, Section 15-5s-6, 6 miles northeast of the Madill Field, has resumed operations at 2,165 feet.

Six miles southeast of the Madill Field, Industrial Oil & Gas Co.'s No. 1 Sharp, NE cor. SE NE, Section 17-6s-5, was drilling at 1,150 feet with nothing showing.

In Carter County, Leah and McCall's No. 2 Carter, NE cor. SW SW, Section 14-1s-3w, is a new producer on the northwest side of the Tatums Pool, and made 193 bbls. of oil on the pump on its initial gauge. It has been pinched to 50 bbls. a day under the proration plan. The oil was found in sand at 2,453-75 feet and the total depth was 2,582 feet.

Amos Drilling Co. and W. H. Gant's No. 1 Sparks-Hooks, SE cor., Section 13-1s-3w, on the northeast edge of the producing area, was shut down with casing cemented at 1,945 feet. A showing of oil was found in sand at 1,946-2,106 feet.

Dry Hole in Seminole Area

Burgher Oil Co.'s No. 1 Earl, NE cor. SE NW, Section 33-9-6, south of the Seminole City Pool, was being abandoned at a total depth of 4,246 feet. The same company announced another location for No. 2 Earl, SW cor. NW NW, Section 33-9-6, about 550 feet west of No. 1 Earl. No. 1 Earl was abandoned because of the fishing job and the Wilcox sand was not reached. The Burgher Oil Co. has been fishing for about five weeks at No. 1 Earl for collapsed pipe. The core barrel was run before the casing collapsed and the returns showed oil indicating another extension area was in prospect in the Greater Seminole district.

New Potentials

The potentials recently taken in pools producing from the Wilcox sand indicate only a small decrease in the production in the Seminole area. The pools gauged are flush areas yielding oil from the Wilcox sand. The report from the state umpire, Ray M. Collins, on open-flow gauges was taken in the different areas to determine the May potentials.

The Wewoka townsite pool was allowed to produce three hours open flow and this figure was multiplied by eight to secure the May potential. A comparison of the April and May potentials is shown below:

Company and lease—	Potential— April	May
Burke-Greis, Henshaw	6,360	10,740
Deep Rock, Douglass 50A	12,930	10,464
Deep Rock, Douglass 60A	14,760	15,680
Deep Rock, Smith	1,363	1,200
Deep Rock, Whitworth	3,660	3,580
Droppleman, Butler	3,120	3,320
Mid-Kansas, Davis	31,380	28,680
Total	73,573	73,664

The South Earlsboro Pool wells were allowed to flow to full capacity for 24 hours to determine the May potentials. The April and May potentials are listed below by companies:

Company and lease—	Potential— April	May
Amerada, Edwards	14,033	12,008
Amerada, Grounds	7,089	6,560
Eason, Anderson	1,595	2,065
Gypsy, Halbutta	892	895
Magnolia, Carbitcher	339	274
Magnolia, Grounds	533	315
Prairie, Grounds	750	795
Sinclair, Jones	340	335
Stanolind, Lena	288	152
Total	25,909	23,399

The wells in the West Seminole Pool were open to full production for 24 hours to determine the May potential. The allowed production for the pool is 30 per cent of the potential. The April and May potential are listed below:

Company and lease—	Potential— April	May
Amerada, Chase	2,446	2,560
Amerada, Morris	1,265	1,545
Gypsy, Pompey	3,697	3,525
Texas, Sandlin	2,180	2,375
Total	9,588	10,005

Greater Seminole Production

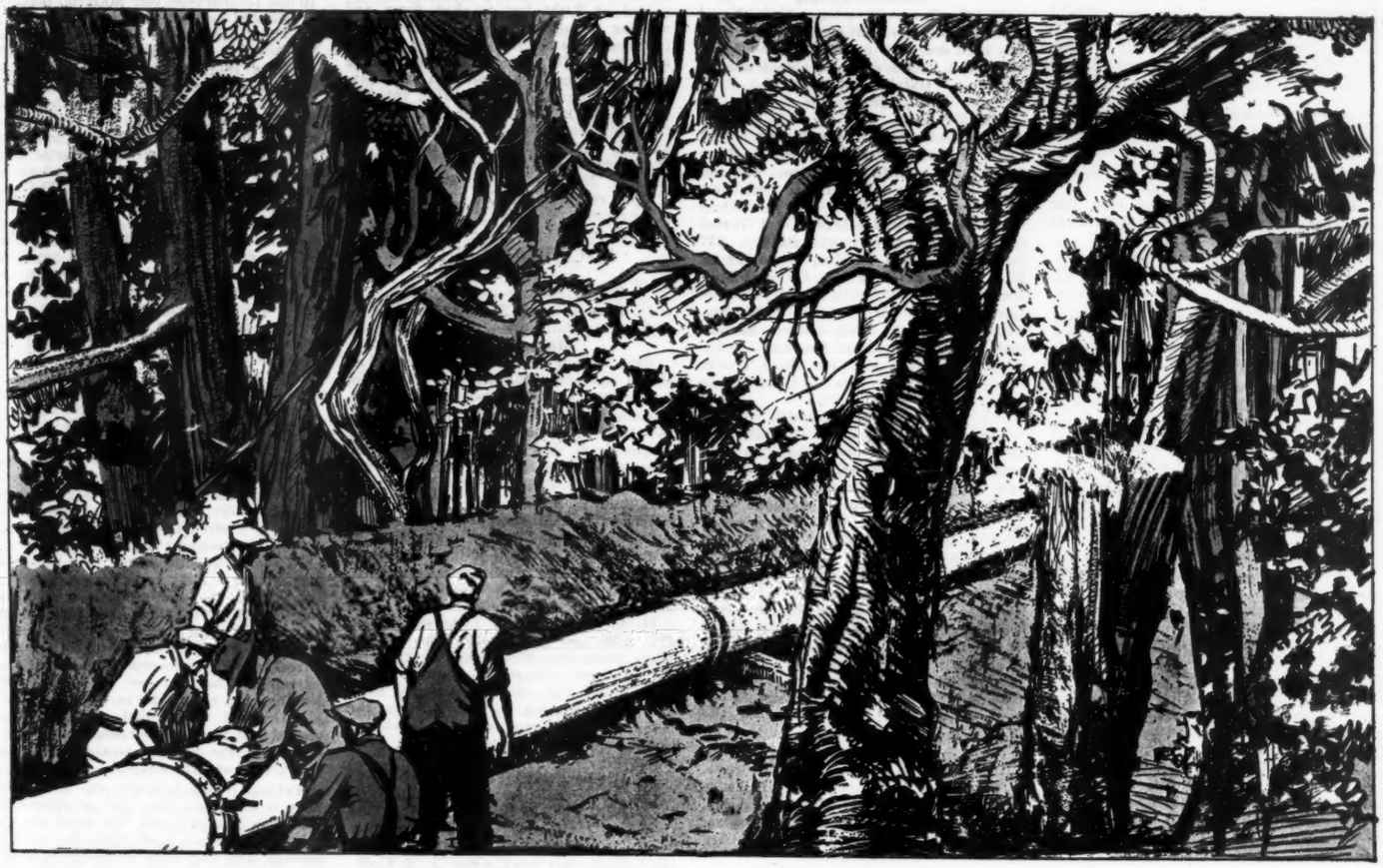
The production from the Greater Seminole area for the week ending May 15, was approximately 189,500 bbls. The first 12 pools listed below comprise the Seminole area, which averaged approximately 137,433 bbls. a day from 1,853 wells. The Seminole area shows an approximate accumulative recovery of 442,125,800 bbls. of oil.

Pool—	Bbls.
Little River	26,499
East Little River	4,915
Carr City	13,512
Maud	2,695
Mission	10,582
Bowlegs	14,588
Earlsboro	19,213
South Earlsboro	6,514
East Earlsboro	19,288
Seminole	14,111
East Seminole	1,612
Searight	3,904
Total	137,433
Allen	12,028
Asher	685
Wanette	6,833
Konawa	7,923
Sasakwa	2,488
St. Louis-Pearson	23,610
Grand total	191,000

Oklahoma City Shipments

The total shipments from the Oklahoma City Field for the week ending May 16, were 1,310,022 bbls. of oil. The

THROUGH MIGHTY FORESTS



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shipments by companies were as follows:

Company—	Bbls.
Champlin	12,873
Empire	260,384
Magnolia	8,685
Oklahoma	115,531
Operators	37,419
Prairie	6,426
Shell	78,346
Sinclair	404,484
Stanolind	331,385
T.T.I.O.	17,168
Tidal	6,088
Anderson-Prichard	6,720
Century	4,794
Petroleum P. L.	4,536
Crude Oil P. L.	13,213
Total	1,310,022

The daily production and pipe line shipments from the Oklahoma City field were as follows:

	Bbls.	
Day—	Prod.	Shipments
May 10	170,141	170,756
May 11	140,998	190,297
May 12	204,359	197,239
May 13	175,404	211,959
May 14	150,759	203,018
May 15	205,448	205,440
May 16	182,140	130,413
Total	1,229,249	1,310,022

Carter County

K. D. Oil Co. has the rig up for No. 1 Burton, C SW NW, Section 30-1s-2w. Lesh & McCall's No. 2 Carter, NE cor. SW SW, Section 14-1s-3w, has been completed for 100 bbls. in sands 2,453-2,578 feet, total depth 2,582 feet.

Creek County

Abbott, Dean and others moved the rig in for No. 1 Schuler, SE cor. NW NW, Section 1-19-8. Wisconsin Oil & Gas Co. has a machine on the location for No. 1 Hillis, SW cor. NW NE, Section 6-18-8. McCurry and others' No. 1-A Fulsom, CWL NE NW SE, Section 32-17-11, is spudding. Evans, Lair and others' No. 1 Nants, NE cor. NW SW, Section 30-19-9, has been abandoned at 2,594 feet. Magnolia Petroleum Co.'s No. 4 Boone, SE cor. SW SE, Section 34-17-7, an old well deepened, has been completed for 7,500,000 feet of gas in sand 2,945-48 feet. C. O. Buckles' No. 1 D. Cubbie, SW cor. NW SE, Section 19-17-8, is dry and abandoned at 3,672 feet.

Haskell County

Enterprise Gas Co.'s No. 1 Green, C SW NW, Section 11-9-18, is dry and abandoned at 1,273 feet. Finefield & Connell's No. 1 Townsite, Block 50, City of Kinta, NW cor., Section 6-7-20, made 1,000,000 feet of gas in sand 792-875 feet.

Jefferson County

C. D. Chenault's No. 1 Grover, SE cor. NE, Section 15-7s-6w, is drilling at 890 feet.

LeFlore County

Sooner Oil & Gas Co.'s No. 1 Clyman, CSL NE NW, Section 28-7-26, is drilling at 630 feet. No. 1 Peck, SE cor. SW SE, Section 22-7-26, is dry and abandoned at 1,930 feet.

Lincoln County

O. H. Parkening and M. H. Watts' No. 1 Grant, NW cor. NE, Section 32-17-4, is dry and abandoned at 4,551 feet. Magnolia Petroleum Co.'s No. 2 Tillford, NW cor. SW SE, Section 7-14-4, made 4,188 bbls. in Wilcox sand 4,970-89 feet. No. 1 Wagner, NW cor. NE, Section 18-14-4, has been completed for 648 bbls. in Wilcox sand 4,958-68 feet.

Marshall County

Harreld & Hudson's No. 1 Williams, SW cor. SE NE, Section 24-7s-5, is a rig. McCrary & Frame made location for No. 1 Witworth, SW cor. SE, Section 24-7s-5. Industrial Oil Co.'s No. 1 Sharp, NE cor. SE NE, Section 17-6s-5, is dry and abandoned at 1,105 feet.

Noble County

The Prairie Oil & Gas Co.'s No. 1 Upperman, SW cor. NW, Section 22-22-1e, is dry and abandoned at 4,675 feet.

Muskogee County

G. S. Wilson's No. 1 Lewis, SW cor. NW NE, Section 12-15-15, is spudding. Wineland and others' No. 1 Jackson, SE cor. NE NW, Section 17-13-16, is rigging. Harsha & Dulaney's No. 1 Barnett, C SE SE, Section 19-16-15, has been abandoned at 1,898 feet. J. A. Swindler & Son's No. 4 Crabtree, NW cor. NE SE, Section 4-14-18, has been completed for 25 bbls. in sand 1,201-24 feet. A. Degan's No. 1 Kerr, NE cor. SW SW SE, Section 7-12-19, is dry and abandoned at 1,192 feet.

Okfuskee County

Mid-Continent Petroleum Co.'s No. 1 Phillips, NE cor. SW, Section 32-12-10, has been deepened to Wilcox sand 3,755-3,838 feet and is dry and abandoned.

Oklahoma County

T. B. Slick estate made location for No. 2 Whitfield, NW cor. SW SE SE, Section 34-12-3w. Champlin Oil & Gas Co. and Hall & Briscoe's No. 1, Block 22, Lot 36, Central Addition, SW cor. NW SE, Section 3-11-3w, Oklahoma City Pool, is a cellar. H. F. Wilcox Oil & Gas Co. and others' No. 1 Terminal, Block 7, Government Survey, SW cor. NW, Section 3-11-3w, is moving in. H. F. Wilcox Oil & Gas Co. and Marshall's No. 1, Block 9, Lot 5, Chapin-Levi Addition, SW cor. NW NW, Section 10-11-3w, is a rig under construction. Plains Petroleum Co. and Capitol Producing & Refining Co.'s No. 1 Travis, SE cor. NW, Section 15-11-3w, is a cellar.

Pottawatomie County

Arms Drilling Co.'s No. 1 Duff, NE cor. NW SW, Section 10-7-4, has been completed for 189 bbls. from Hunton lime topped at 3,780 feet, total depth 4,161 feet. Magnolia Petroleum Co.'s No. 1 Harris, NW cor. SW, Section 6-6-4, is dry and abandoned at 4,463 feet in Wilcox sand.

Stephens County

George Pace and others' No. 1-C Bush, NE cor. SE NW, Section 3-2s-8w, made 12 bbls. on the pump from sands 1,593-96 feet and 1,611-37 feet.

Osage County

Producers & Refiners Corp.'s No. 1, NW cor. SE SW, Section 15-24-7, has been completed for 23 bbls. in Burgess sand 2,575-93 feet.

Tulsa County

Bradshaw and others' No. 1 Morgan, SE cor. SW SW SW, Section 7-19-14, is dry and abandoned at 1,832 feet. W. H. Bowder and others' No. 1 McIntosh, CWL NW NW, Section 4-17-14, is dry and abandoned at 1,535 feet.

Wagoner County

F. D. Helshel's No. 2 Apueka, SW cor. NW, Section 6-17-15, is rigging up.

SOUTHWEST TEXAS FIELDS

(Continued from Page 48)

corner of the townsite and a little more than west of production, is rigging up and it will be two or three weeks at the best before it is down to pay depths.

Serpentine Showing

In southwestern Bastrop County Schimmel & Batts' (Texas Petroleum Co.) No. 1 Williams reported with 317 feet of serpentine at 1,997 feet was bailing at last reports and had bailed down 1,000 feet and was getting a gallon of oil with each bailer. It was pronounced a small well. It is 2 miles southwest of the Yoast Pool which is producing from the serpentine.

Laredo District

In addition to the completions by The Texas Company and by Magnolia Petroleum Co. in the extension to the Schoolfield-O'Byrne Pool in northern Duval County O. W. Killam completed No. 7 Bustamente for 40 bbls. in the Jennings-Muckelroy Pool in Zapata County in sand at 1,246-53 feet.

The well being watched most closely in the district now is S. J. Carpenter's No. 1 Juan Benavides, a wildcat 1½ miles east of the O'Hern-Seacord and Cole Pools. It was reported a week ago as a likely looking producer, at 1,669 feet where a saturated core was taken. It has set casing and is about ready to test.

Ordinary progress was made on everything else in the Laredo district excepting the Humble Oil & Refining Co.'s No. 50 Kohler an extra deep test which is tied up with a fishing job at 6,087 feet.

In the Escobas or Jennings-Muckelroy Pool in Zapata County E. C. Brogan who had a showing at 1,492 feet in his No. 1 Montemayor in Block 11, Survey 64, got salt water and is now down 1,850 feet and coring. This well is semiwildcat, being a few locations to the east from nearest production, and has failed to find production in the regular sand of the field.

Jim Wells County

Carsil Oil & Gas Co.'s No. 2 McGill in northern Jim Wells County last reported at 3,004 feet is shut down and waiting for orders. No. 1 McGill, 900 feet south, came in a gasser at a little less than 2,700 feet but due to running wild for a time it was plugged and abandoned to prevent water getting into the sand. No. 2 was started to prove the field but seems to have missed the sand and the company will have to hunt for the boundaries of the pool in another direction. No. 1 was a fine gas well when it first came in but No. 2 is evidently off structure.

MICHIGAN FIELDS

(Continued from Page 55)

wells ranging from 2,000,000 to 10,000,000 feet in daily open flow capacity.

Muskegon Field

Blue Arrow Petroleum Co. has resumed operations on its No. 2 Torrent estate, SW NW SE, Section 8-10n-16w, Muskegon Township. Only one other well, the Blue Arrow company's No. 1 Laman, deepening to the Monroe gas sands and now about 2,000 feet is drilling in the old Muskegon Field.

H. and W. Feicke's No. 1 Feicke, SE SW, Section 1-11n-17w, Fruitland Township, Muskegon County, is drilling at about 2,175 feet with but a few slight traces of oil in the upper and lower Traverse. The well is nearing Dundee Limestone, it is believed.

H. C. Nelson's No. 1 Arvid Nelson, SE NW, Section 24-12n-18w, White River Township, Muskegon County, west of Montague village, is shut down at about 2,200 feet with no signs of commercial production in the Traverse or Dundee. These two wells are Muskegon County's only uncompleted wildcat projects.

Western Michigan Wildcats

Gas blew gravel, water and small rocks high above the old Swastika Oil & Gas Co.'s No. 1 Creamer, NW NW, Section 34-22n-16w, Manistee Township, Manistee County, this week while A. S. Cochran, Muskegon contractor, was pulling casing to plug and abandon the hole. The gas was believed to come from a surface sand at about 650 feet and was estimated to have a pressure of 1,000 pounds to the square inch. Earth which caved into the hole shut off the flow of gas about half an hour after it first blew out. The well was drilled to a total depth of 2,045 feet last fall at which salt water was encountered and the hole temporarily abandoned.

The Melrose Oil & Gas Co.'s No. 1 in Section 5, Brooks Township, Newaygo County, temporarily abandoned two years ago after it flowed over the top of the derrick from the upper Traverse at 2,415 feet, will be placed on the pump.

The Newaygo Gas & Oil Co.'s No. 1 A. J. Bates well, NE SE, Section 12-13n-13w, Sherman Township, Newaygo County, is drilling at about 5,540 feet with no show of oil or gas since it went out of the salt.

Mason County

Thompson Brothers, Muskegon contractors, have succeeded in cleaning up a bad fishing job on the former Taggart and Welsh No. 4 Campbell & Barnette well in Logan Township, Mason County, and will carry it on from 2,600 to about 3,300 feet at which they hope to strike commercial production in the Sylvania formation.

Taggart and Welsh's No. 2 Lake, also located in the Walla Halla Pool in Logan Township, will be cleaned out, tubed and pumped for oil struck three years ago in the upper Traverse at a depth of 1,906 feet. It was one of three producers struck in the township at that time.

Oceana County

Two wells near Rochdale Inn Fruitvale, one in Section 6, Blue Lake Township, Muskegon County, and the other in Section 23-13n-16w, Otto Township, Oceana County, have been placed on the pump for a test in the upper Traverse at about 1,980 and 1,960 feet, respectively. They are Buchanan and Frye's No. 1 Fruitvale and the Fruitvale Lot & Land Owners' No. 1 C. J. Sipple.

OIL MAY BE TREATED BY PROPER HEATERS

(Continued from Page 58)

10 and 15-inch pipe, etc. Material required is two and one-half joints of the smaller pipe and two joints of the larger size. Weld the larger pipe over the smaller, allowing 18 inches of small pipe to extend on each end; weld both joints the same and connect them together, one over the other, by welding a 4-inch connection 6 inches long in each end, one connection to be tied in the large pipe and the one on the opposite end to be blank, used as a brace only. The end with the open connection will be the back of the heater. Tie the two small pipes together at the back end and weld an ell on the front end of the small pipe for stack. Weld a 3-inch connection on under side of heater 18 inches from the weld, and a 3-inch connection the same distance back on the top side. The lower connection will be used as inlet and the upper connection as discharge. Fluid passes from front to back and return through the outer pipe or jacket, and heat makes the same route through the small pipe traveling considerable distance to obtain the required heat.

This heater can be used on either the gun barrel or settling tank, but I believe on a lease that is making a large amount of water best results can be obtained by using as a circulator on a settling tank. To do this connect inlet to the bottom of the tank and discharge to a point 18 inches below fluid level, using a 3-foot drop inside the tank to prevent disturbing the oil. This acts as a siphon and the desired heat can be obtained more readily than treating through the gun barrel, as this connection leaves the gun barrel free to care for the salt water leaving only the oil to be treated.

On leases where fuel must be purchased this is a considerable saving as it eliminates the need of heating the daily production of salt water.

Taking it for granted the necessary heat is available, the cost of chemicals is still to be considered. Too much chemical does no more good than the correct amount, and only adds to the lifting cost. Therefore, constant check must be kept on oil going over that too much or too little chemical is not used, as using too little means a return trip through the heater for the oil at an additional expense.

This article has only covered the subject at hand very briefly, as more complete information can be obtained by witnessing the actual operation of the various types of heaters herein described.

ROCKY MOUNTAIN AREA

(Continued from Page 58)

No. 1 State, C NE NE, Section 16-1n-57, Fort Morgan anticline, is still shut down at 4,090 feet, and no official announcement has been made as to its plans, though it is reported a rotary will be moved in to complete the hole. Two strings of casing froze and no new hole has been made for several months.

Lincoln County

Eastern Colorado Oil Co.'s No. 1 State, SE cor. NW, Section 36-14s-57, encountered difficulties in underreaming 4¾-inch and has pulled the entire string. Straightreaming has started below the 5⅛-inch, which was set at 1,540 feet.

Jefferson County

Ruby Hill Oil & Gas Co.'s No. 1 Braden, SE cor., Section 24-4s-69, near Denver, has made no new hole since last report and is bottomed at 3,905 feet in hard sandstone.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, near Aurora, is fishing for tools at a total depth of 5,805 feet.

Park County

South Park Oil & Gas Co.'s No. 1 Esche, SE NW, Section 5-9s-76, Muleshoe Dome, is drilling below 2,000 feet and is still in the Pierre shale. It has a small show of gas and a few rainbows, but the quantity of gas is not as large as that found at 1,860 feet. South Park Oil Co.'s No. 1 Milligan, NE SE, Section 13-8s-76, Jefferson district, is bot-

tomed at 2,000 feet and underreaming the 8¼-inch to lower and shut off cavey ground.

Fremont County

Waterville Oil Co.'s No. 1 State, SE cor. NW, Section 16-18-69, north of Canon City, is drilling at 1,285 feet. It starts in the red beds and has the Pennsylvanian as its objective.

Montrose County

Uncompahgre Oil & Gas Co.'s No. 2 Vandemark, SW cor., Section 27-50n-10w, Olathe district, is drilling below 700 feet. It started in a 24-inch hole and is being drilled with standard rig and cable tools.

Archuleta County

Standard Oil Co. of Colorado's No. 1 Fitzhugh, NW SE SW, Section 34-33n-1e, Chromo Dome, will resume at 502 feet about June 1, and its No. 1 Brooks, NW cor. NE, Section 2-32-2e, Price Dome, is rigging up to resume after erecting rig and shutting down for the winter.

WYOMING

Laramie County

The Prairie Oil & Gas Co. is moving in rig material on a structure 10 miles southwest of Cheyenne, between Borie and Corlett, and 6 miles north of the Colorado line in its No. 1 Warren, Section 22-13n-68. This is new territory and it is understood the structure was worked out with a magnetometer. A geographical map indicates that the structure is on the same line of folding as the Wellington and Fort Collins producing fields in Colorado, due south. In between the new structure and the Fort Collins-Wellington Dome lies the Round Butte structure upon which several tests have been drilled and on which the formations were found at much shallower depths than farther south. Several years ago the Prairie company drilled a test in this county on Horse Creek, to the north of Cheyenne.

Carbon County

The Producers & Refiners Corp. also is starting a new wildcat on the Overland Dome in Carbon County. It is rigging up for its No. 1, Section 19-20n-83. The location is near the Overland post office, 8 miles southeast of Walcott, on the Saratoga & Grand Encampment Railroad. It is 30 miles west of the Rock River producing field and 17 miles west and a little south of the Midwest Refining Co.'s wildcat on the Elk Mountain Dome. The last named is the Midwest's No. 27 Union Pacific, NW SE SE, Section 11-20-81, which is rigging up to resume at 1,810 feet after being shut down for the winter. The Producers & Refiners' No. 1, NE SE NE, Section 7-25-86, South Ferris, is drilling at 1,286 feet in sandy shale.

Natrona County

Midwest Refining Co.'s No. 11 Middy, C NE NE, Section 23-35n-79, Midway Dome, is drilling at 6,573 feet in red and gray sand. This well is reported through the first and second benches of the Sundance and probably in or close to the top of the third bench. The results below the second Frontier, in which some oil was found, have not been encouraging, though the core showed saturation in the first sand of the Dakota series. If the third bench of the Sundance is barren, the hole probably will be plugged back to the Dakota sand and tested.

Converse County

Continental Oil Co.'s No. 50 Whiteside, NW SW SW, Section 9-33-76, Big Muddy, is moving in rotary to deepen from 3,345 feet to the Lakota sand in which the Ohio Oil Co. recently completed a 350-bbl. producer. Recently some conferences have been held by representatives of the State and some of the operators in an effort to prevent a drilling campaign to the Lakota in this pool, but the outcome apparently still is in doubt. The Texas Production Co. was not represented at the conference.

Park County

Resolute Oil Co.'s No. 1, NE SW NE, Section 17-57-101, Badger Basin, is reported drilling at 8,530 feet and still in the second Frontier with considerable oil in the hole. No test has been made and officials have not made any estimate of what the well will do, pending its completion. Drilling is in a 3½-inch hole and progress is slow. Midwest Refining Co.'s No. 24 Rosenberg, NE SE NE, Section 26-58-98, Frannie Dome, is standing waiting for crew to rig up.

Big Horn County

Utah Southern Oil Co.'s No. 3 Government, NE cor. SW, Section 29-56-97, Garland Dome, is drilling with rotary at 3,780 feet. It is being deepened 500 feet to the oil pay in the Madison lime and cores are being taken. F. T. Griffith, trustee's No. 1, SE NE SE, Section 29-56-97, a half mile east of the Utah Southern well, is drilling at a corrected depth of 1,450 feet. Ohio Oil Co.'s No. 1 Smith, NE SE SE, Section 33-56-97, cemented the 15½-inch at 1,270 feet.

Washakie County

Ohio Oil Co.'s No. 1 Strothers, SW SE NW, Section 19-45-92, Neiber Dome, is drilling at 3,898 feet.

Sweetwater County

Mountain Fuel Supply Co.'s No. 2 Capper, SW cor. NE, Section 2-19-104, North Baxter Basin, after plugging back from 3,660 feet to shut off bottom water in the Sundance, shot a sand in the Sundance at 3,595-3,630 feet twice and is cleaning out. The gas has increased to around 2,000,000 feet a day and the well is making 20 to 25 bbls. of 36 gravity oil. The oil was found in the top of the Sundance. While it is not considered commercial, it is looked upon as an important development. The Baxter Basin structure is one of the largest in Wyoming. Gas developed on the south dome in the Frontier and lower horizons appears to be of a different quality from that found on the north dome, upon which the Cappers well is located. The area is considerably faulted and the possibilities of oil production have never been overlooked.

Fremont County

Producers & Refiners' No. 10, SE NW SW, Section 14-32-95, Big Sand Draw, is coring at 5,238 feet. Same company's No. 2, NW SE NW, Section 33-34-92, Muskrat Dome, is drilling at 5,001 feet in shale and bentonite. It is considerably below the Frontier sand in which the discovery well found a big flow of gas.

Niobrara County

Indian Petroleum Co.'s No. 1, NW NE, Section 7-35-65, Lance Creek, which is being deepened to the Sundance, is drilling at 3,876 feet, with 300 feet to go to reach the objective.

Weston County

There were no completions reported in the Osage Field. Two new operations were reported. Wytex Oil Co.'s No. 5 Logan McCullough, SW NE NE, Section 23-46-64, is rigging up, and Yellowstone Petroleum Co.'s No. 1, NE cor. NW, Section 23-46-64, has rig on location. Carl Cundy's No. 2, NE cor., Section 31-46-64, is rigging up, and Tom Don's No. 2, NW cor. SE, Section 23-46-64, set 10 feet of surface pipe and is drilling ahead. Hugh Updike's No. 1, SE SW NW, Section 23-46-64, is drilling at 1,600 feet, and Chadron-Osage Co.'s No. 2, NW SE, Section 31-46-64, spudded and shut down.

MONTANA

Toole County

Three completions and two new operations were reported in the Kevin-Sunburst Field. Imperial Oil Co.'s No. 9 Bluhm, NW SW NE, Section 19-35-1w, was rated a 21-bbl. well after being shot with 40 quarts. It cut the Sunburst sand at 1,305-10 feet and the Ellis sand at 1,543-74 feet. Nepstad-Vander-Pas' No. 1 Hoyt, C NE NW, Section 14-32-2w, was dry and abandoned at a total depth of 1,595 feet. J. W. Johnson and others' No. 1 Lutz, C NW NW, Section 34-33-2w, reported last week as coming in as a large gas well, found the gas at 1,494-1,534 feet and gauged 12,000,000 feet the first day with a pressure of 350 pounds. One new location is Monopeg Oil & Gas Co.'s No. 4 Levnick, CNL NE SE, Section 28-35-1w, which has rig up, and the other is E. C. Moffitt's No. 1 Dunham, NW cor., Section 1-33-1w, which has rig up.

Majestic Oil & Gas Co.'s No. 3 Davis, NE cor. SW, Section 27-35-3w, is drilling at 200 feet, and Diamond Oil Co.'s No. 17 McCormick, CNL SE NW, Section 33-35-2w, is drilling at 250 feet.

In the Barthelote district, Doctor Grover and others' No. 1 Byers, NW cor., Section 29-36-1e, has rig up, and Liquid Gold Oil Co.'s No. 1 Roberts, C NW NE, Section 25-36-1e, is drilling at 2,250 feet.

Glacier County

B. & H. Oil Co.'s No. 1 Haines, C SE SE, Section 2-34-6w, Cut Bank district, was drilled to 2,785 feet and is being plugged back to 2,761 feet to cement. It looks as if it will be good for 50 bbls. initial per day. The sand was cut at 2,761-77 feet. Montana Utilities Co.'s No. 1 Hogland, NW cor. SW, Section 13-34-6w, spudded and shut down. Fulton Petroleum Co.'s No. 1 Blackfoot, SW NE NE, Section 28-36-12w, Milk River district, is drilling at 1,560 feet in the top of the Colorado shale and apparently getting through the bad ground which caused so much trouble in keeping the hole straight.

Carbon County

Ohio Oil Co.'s No. 1 Montana Industrial, SE SW NE, Section 11-7s-21, Dry Creek, an offset on the north to the discovery well in the Dakota, is drilling at 5,175 feet and probably will be a completion by the end of the month. Same company's No. 1 Souders, C SW SE (corrected), Section 2-7-21, is drilling at 2,479 feet, and Carbon Oil & Gas Co.'s No. 1 Armstrong, SW cor. NW, Section 7-7-22, is drilling at 1,760 feet.

Liberty County

G. G. Howard's No. 1 Schoonover, CEL NW NW, Section 18-36-6e, Bear's Den structure, is reported to have entered a gas sand at 1,985 feet and to be making 7,500,000 feet per day. This is the first of six wells to be drilled to build up a gas supply for the Northern States Utilities Co.'s pipe line to Great Falls. Montana Consolidated Gas Co.'s No. 1 Brown, C NE NE, Section 24-35-4e, Haystack district, formerly known as Perkins and others, is shut down at 475 feet.

Hill County

Montana Consolidated Gas Co.'s No. 2 Mangell, SW NE NW, Section 32-34-14e, Brown's Coulee, formerly known as the Jones Oil Co., is shut down at 1,950 feet, and same company's No. 1 Carruth, NW cor. SW, Section 34-33-12e, spudded 10 feet and shut down. Montana Consolidated's No. 2 Roebuck, C NE SE, Section 33-33-12, is drilling at 740 feet.

Choteau County

Coolidge & Coolidge and Texas Pacific Coal & Oil Co.'s No. 2 Lehfelt, SW SE NE, Section 32-26-17e, Sherrard Dome, is drilling at 1,000 feet.

Rosebud County

Prairie Oil & Gas Co.'s No. 1-X, Contract 3, NE SW NW, Section 26-10n-39, Porcupine Dome, has been unable to get

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KANSAS FIELDS

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cor. NE, Section 6-14-9w, Ellsworth County, was underreaming 8-inch casing at 2,420 feet.

Flynn and others' No. 1 Rife, C NW, Section 23-18-16w, Rush County, was spudding. It is located about a mile south of the same company's other gas wells which were recently completed. Dewey and Mitchell's No. 1 Greenwalt, C SW, Section 17-19-16w, Rush County wildcat, was drilling at 2,720 feet carrying a hole full of water found in sand at 2,490-2,500 feet.

In the Raymond area in Rice County, Detrick and Langston's No. 1 Purcell, NW cor., Section 33-19-9w, several miles northeast of the production in the pool, was underreaming 10-inch casing at 1,265 feet. Solar Oil Co.'s No. 1 Ralph, SE cor. NW, Section 3-19-10w, Rice County, is a new location.

Sooby and others' No. 1 Bowman, NE cor. SE, Section 8-32-5, Cowley County, found 500,000 feet of gas in a shallow formation at 710-17 feet and was drilling deeper.

Muth Brothers' No. 1 Freeman, SE cor., Section 4-21-6w, which extended production a half mile in the Welch Pool, in the southeastern part of Rice County, made 212 bbls. of fluid in 10 hours of which 33⅓ per cent was water from the chat at 3,430-60 feet.

Gilbreath and others' No. 1 Bratton, C NE, Section 33-11-13w, a wildcat in Russell County, found a showing of oil in the Oswald lime at 3,058-94 feet. The test is located about 12 miles east from the nearest production in the county.

Butler County

Garden and others' No. 2-B Sluss, CSL NE NW, Section 6-27-6, is dry and abandoned at 2,776 feet.

Greenwood County

Empire Oil & Refining Co. and others made location for No. 3 Hillman, SW cor. NE NE, Section 35-23-11. Gore and Phillips Petroleum Co.'s No. 1 Edwards, NE cor. SE NE, Section 35-24-10, is dry and abandoned at 2,125 feet. Mathews and others' No. 1 Thrall, NE cor., Section 17-24-12, is dry and abandoned at 1,838 feet.

McPherson County

Lario Oil & Gas Co. and others made location for No. 1 Miller, NE cor. SE, Section 24-19-2w, Ritz-Canton area. Olsen Drilling Co. and others' No. 2 Koehn, NE cor. SW SE, Section 36-19-2w, is a rig going up. Twin Drilling Co., Phillips Petroleum Co. and Shell Petroleum Corp. are building the rig for No. 2 Gratton, SE cor., Section 19-19-1w. W. C. McBride, Inc., made location for No. 2 Whitwright, NW cor. SW, Section 30-19-1w. Goering Brothers and A. F. Perry's No. 1 Loquemont, SW cor. NE, Section 32-19-1w, is a rig. Stanolind Oil & Gas Co. and Amerada Petroleum Corp. made location for No. 4 Flook, NW cor., Section 1-20-2w. Stanolind Oil & Gas Co. and Amerada Petroleum Corp. and others made location for No. 2 Zerger, NE cor. SE, Section 16-21-3w. Moriarty and others' No. 2 Sadie, C SE SW, Section 2-19-2w, has been completed for 20,870,000 feet of gas in chat 2,938-50 feet. The Prairie Oil & Gas Co. and others' No. 1 Way, SE cor., Section 18-19-1w, has been completed as a dry hole at 3,565 feet. Lario Oil & Gas Co. and Shell Petroleum Corp.'s No. 1 Becker, SW cor. SE NE, Section 36-19-2w, made 1,110 bbls. in 12 hours from Viola lime 3,396-3,411 feet. Phillips Petroleum Co. and Shell Petroleum Corp.'s No. 1 Gratton, SW cor. SE, Section 19-19-1w, has been completed for a potential of 204 bbls. in chat 2,958-96 feet. Henderson & Holden's No. 1 Sommerfield, NE cor. SW, Section 23-19-1w, is dry and abandoned at 3,574 feet. Lassen and Shell Petroleum Corp. and others' No. 1 Unruh, SW cor. SE, Section 31-19-1w, swabbed 835 bbls. in 12 hours from Viola lime 3,414-23 feet. Reserve Oil Co.'s No. 1 Ritz, NE cor. SW, Section 31-19-1w, swabbed 910 bbls. in 12 hours from Viola lime 3,400-08 feet. Washoma Oil & Gas Co. and Shell Petroleum Corp.'s No. 1 Meeks, NW cor. NE SW, Section 7-20-1w, has been completed for a potential of 1,850 bbls. at 2,982 feet after being deepened from 2,976 feet. Otstot and others' No. 1 Kaufman, NW cor. SW, Section 15-21-3w, has been completed for 400 bbls. in chat 3,035-74 feet.

Sedgwick County

Derby Oil Co. is erecting the rig for No. 6 Eastborough, SE cor. NW NE, Section 19-27-2, Eastborough Pool.

A. C. WALLEN KILLED

CHATHAM, Ontario, May 16.—Alexander C. Wallen, aged 62, a prominent oil producer in the Oil Springs, Ontario, field, was instantly killed when his automobile was ditched. He learned drilling as a youth, and later drilled in Austria for Bergheim & MacGarvey and for the Intercolonial Deep Well & Boring Supply Co. in Australia. Since 1895 he has been an operator in the Oil Springs Field.

E. G. LAW DIES

CHATHAM, Ontario, May 16.—E. G. Law, president of the Fuego Oil Co., died recently at Toronto. Mr. Law was actively interested in oil development in the Acadia Valley Field near Oyen, Alberta.

CALIFORNIA GASOLINE DAILY CAPACITY GAINS

(Continued from Page 79)

fornia over the past year. The matter of low vapor pressure in finished products has become increasingly important in southern California and some of the older plants have been remodeled to enable the owners to manufacture more stable grades. Long Beach, Santa Fe Springs and Ventura in the order named follow Kettleman Hills in the production of natural gasoline. Of the three areas, Ventura probably has been the most active in new plant construction over the past year. Additional wells were completed in the Elwood Field and the two plants located there, now have a capacity of 90,000 gallons daily.

Fewer Plants in Oklahoma

So far as Oklahoma is concerned there was very little expansion in natural gasoline plants outside of the Oklahoma City Field. In last year's survey 283 plants were listed in that State with a capacity of 2,839,693 gallons daily. Their number decreased to 242 with a capacity of 2,823,312 gallons on May 1 of this year.

The decrease in number is due to a large number of small plants being consolidated or shut down. A comparison of the data given in this and last year's surveys shows that several plants located in the older fields are no longer operating. When natural gasoline prices are relatively high manufacturers can continue to operate these plants located in small and widely scattered fields although the output of each plant has been reduced to a few hundred gallons daily. But under conditions of the past year these operations were generally unsatisfactory and rather than continue to take losses, several manufacturers have dismantled their plants and surrendered their gas contracts.

Although not as large as in the case of Kettleman Hills Field, most of the new plants in the Oklahoma City Field have not been operated at capacity. The allowable production of the field is being gradually increased giving the manufacturers more gas with which they have been able to operate their plants nearer capacity. It is believed that the field will show a gradual increase in production over the remainder of the year.

The Greater Seminole area, which was the outstanding section of Oklahoma in new plant construction for a period of three years, has been definitely on the decline over the past year. The gas supplies have decreased steadily and some of the smaller plants have been dismantled. Several of the larger plants are only operating a small part of their former capacity.

Small Gain in Texas

Although Texas has made the largest gain in crude oil production which usually points to a similar expansion in natural gasoline plants, the State's gain in the latter facilities over the past year was not as great as that of the previous year. The number of plants decreased from 150 to 140. The capacity increased during the year from 2,018,767 gallons to 2,296,883 gallons.

The gain for the State is accounted for in the Panhandle development and a few small fields, including extensions of old producing areas. The Texas Panhandle, which has become the largest single area in natural gasoline production in the Mid-Continent, expanded its plant facilities the latter part of last year. There have been no important increases in recent months.

The new East Texas developments, which is held responsible for the collapse of the crude oil market structure, has not resulted in the construction of a natural gasoline plant. The gas flow even from the new wells is small and later when the wells are being pumped practically no wet gas will be available. In the older Van Pool, which is considered a part of the East Texas development, the Pure Oil Co. built a large plant. This field, over 80 per cent of which belongs to the Pure company, is being operated on a unit basis and the gas supplies are being conserved so as to assure the long-time operation of the plant.

CANADIAN FIELDS

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finally reviewed by the provincial government. A permanent advisory committee to work with the department of lands and mines will be appointed from oil operators and other interested parties.

Keho Lake Strike

In the Keho Lake district, near Lethbridge, Hudson's Bay Oil & Gas Co.'s No. 1 Keho, LSD 2, Section 17-11-22w4, encountered a second and thicker oil sand in the upper Benton shale with a fair commercial production. The first show met in the Bentons at 3,680 feet showed approximately 10 bbls. a day on a bailing test, the crude being around 22 gravity or better. The hole was deepened, getting more oil as it went down, and was drilled to 3,776 feet, when a second production test was made. This test indicated 50 bbls. of lighter crude, testing 32.3 gravity. The hole is now deepening around 3,800 feet. Production is apparently from a stray sand in the Benton formation; at the latest reported depth the test is apparently 600 feet above the base of the Benton and 100 feet above the Bow Island gas sand. Results in the latter horizon, which was one of the original objectives, will be watched with interest. The oil is stated to come from sandstone stringers in the shale ranging from a few inches to 6 feet in thickness and continuing through 90 to 100 feet, with lighter crude as the test deepened. Considerable gas came with the oil. A 1,000-bbl. tank has been set up to handle production.

Hudson's Bay Oil & Gas Co,. in association with Continental Oil Co. of Delaware, holds extensive acreage on the Keho Lake structure. The field was geologized by D. L. Powell and C. M. Clark of the Continental Oil Co. geological staff, and upwards of 30 core drill tests were put down before the commercial location was made. Acreage in the Keho Lake district is also held by The Texas Company of Canada, Commonwealth Petroleum, Ltd., Nordon Corp., Vulcan Oils, Ltd., and a number of smaller blocks by Lethbridge, Barons and Nobleford men, and Imperial Oil, Ltd., is reported to have acquired considerable acreage. Since the strike, acreage is reported to have been leased from farmers holding oil rights for 50 cents an acre with drilling clause and royalty on production.

Turner Valley Production

Pipe line runs for the Turner Valley Field for April aggregated 114,217 bbls., compared with 128,975 bbls. in March and 87,278 bbls. in April, 1930. The decline in deliveries was due largely to increased direct sales to consumers at the wells. Deliveries to Regal Oil & Refining Co. were 7,195 bbls. light crude and naphtha, compared with 12,825 bbls. in March. Deliveries to Imperial Oil, Ltd., included 100,349 bbls. of naphtha and 6,673 bbls. of light crude. The latest summary shows 69 wells producing in April. The outstanding producer for the month was Mercury Oils' No. 1 with 15,274 bbls. East Crest Oil Co.'s No. 2-A ranked second with 7,769 bbls., and Miracle Oils' No. 1 ran third with 5,988 bbls. In the north field, Model Oils' No. 1 has further increased its production to 5,490 bbls. for the month.

New Producing Wells

The past week has been marked by the bringing in of several new producing wells in Turner Valley. In South Turner Valley, East Crest Oil Co.'s No. 3, LSD 4, Section 16-19-2w5, is reported to have blown into big production at 4,843 feet, 392 feet in the lime. The test logged somewhat lower than No. 2-A, the big producer, which got the lime at 4,243 feet and big production at 4,639 feet. Following the strike in No. 3, freezing developed, which prevented a satisfactory production test; the tools were run, showing the hole clear of bridging, and the well is being alternately subjected to back pressure and blown down. Indications are for a good well, but probably not as large as No. 2-A, which started with 450 bbls.

Among the Imperial tests in the south, Mayland Oil Co.'s No. 6, NE Section 17-19-2w5, is unofficially reported drilling into production at 4,935 feet, 269 feet in the lime, with an estimated wet gas flow of 15,000,000 feet.

In the Central Turner Valley, British Dominion Oil & Development Corp.'s No. 3, LSD 6, Section 12-20-3w5, has been shot in the lime around 5,542 feet, increasing its wet gas production to around 12,000,000 feet, with crude naphtha recovery testing 40 bbls. a day, and increasing. British Dominions No. 2, same LSD, which has been making around 40 bbls. from an horizon 113 feet in the lime, will also be shot to increase production.

Toward the north, Richfield Oils' No. 2, LSD 12-13, Section 13-20-3w5, is drilling 243 feet in the lime at 4,970 feet, with wet gas flow estimated 12,000,000 feet a day and potential naphtha recovery over 100 bbls. The test will deepen about 60 feet, where a further sand is expected.

South Turner Valley

South of Mercury's No. 1 producer, a Calgary syndicate, including S. G. Carscallen, C. E. Snyder, W. Fay Becker and others, have taken over the acreage and unfinished test of Hylo Oils, Ltd. C. E. Snyder, Turner Valley driller, has surveyed Hylo's No. 1 in LSD 12, Section 4-19-2w5, and has contracted to complete it. The test has been shut down for some months at around 2,315 feet. The 16½-inch casing was set at 1,780 feet and 13½-inch hole will be carried down from this point for some distance, with a view to setting 8¼-inch casing in the lime.

Central Turner Valley

In the Central Turner Valley, Dome Oils' No. 2, LSD 16, Section 36-19-3w5, got the lime at 5,155 feet and is cementing casing around 5,167 feet, preparatory to drilling into production. The test got around 1,500,000 feet of wet gas in the top of the lime, in addition to a fair production of light crude in the Dalhousie sand.

Drilling of Signal Hill Oil Co.'s No. 2. LSD 9, Section 34-23-5w5, on the Moose Mountain structure will likely be resumed as a result of an arrangement where that company is merged with Popular Oils, Ltd. The merger is to be known as Graystone Consolidated Petroleums, Ltd.

Border Fields

On the Spring Coulee structure, Alberta Pacific Consolidated's No. 1, Section 15-4-23w4, is at 6,191 feet and again testing production. The first sand between 5,935 and 5,970 feet were very dense, while the second test around 5,994 feet showed a more porous sand, with considerably better indications. Sands showing oil impregnations have been cut at various depths.

On the Reserve structure east of Coutts, Maylond Southern's No. 1, LSD 13, Section 4-1-9w4, is reported resuming after shutting off a gas flow struck at 310 feet, with 21-inch pipe.

Shareholders of Benton Oils, Ltd,. held their annual meeting last week at Calgary, when the following directors were elected: Donald McLaughlan, Charles Knight, G. A. Trainor, H. H. Inglis, J. C. Ayer, all of Calgary.

Red Coulee Field

On the Alberta end of th Red Coulee structure, Southern Alberta Exploration Co.'s No. 2, Section 3-1-16w4, has cemented 8¼-inch casing at 2,060 feet and is preparing to drill into production. Alberta Pacific Consolidated is reported starting work on Devonshire's No. 1, LSD 3-4, Section 10-1-16w4. The test, drilled by Devonshire Oils, Ltd., to 1,950 feet, will be completed by the Alberta Pacific company. Production is looked for in both these tests around 2,500 feet.

In the northwestern extension of the Red Coulee Field, Dalco Oil & Gas Co.'s No. 2, LSD 7, Section 19-2-17w4, is drilling at 2,780 feet.

On the Montana end of the structure, Mid-Continent Oil & Refining Co. of Vancouver, headed by D. A. MacDonald, is preparing to start work on three new tests on the 200-acre tract where the company last year drilled two producers.

East Central Alberta

In the Ribstone Field, east central Alberta, Ribstone Oils, Ltd., has started hauling crude from the field to Rivercourse for delivery to the C.P.R. for locomotive fuel. Delivery is being made under contract, and production is being taken from the three Meridian Oil's wells and from Imperial Oil's No. 2 Ribstone. Before delivery the crude is treated in a dehydrating plant. Rayco Oils' No. 1, LSD 3, Section 4-47-1w4, is reported drilling at 1,801 feet, and should get production within about a week. Algonquin-Commonwealth's No. 2, LSD 5, Section 16-45-1w4, is reported rigged up ready to spud in.

Shank Lake Project

In the border district, southern Alberta, United States interests, reported to be associated with the Parco Oil Co., are reported preparing for a commercial test on the Shank Lake structure.

Test in Manitoba

In southwestern Manitoba, Commonwealth Petroleums' No. 2, LSD 2, Section 26-2-9WPM, near Manitou, is reported spudding in.

Survey for British Interests

On behalf of British interests who are considering development work in the Alberta fields, James C. Templeton, B.Sc., F.G.S., managing director, and Dr. Simon Papp, chief geologist, of the International Geophysical Prospecting Co. of London, England, have arrived in Calgary to undertake geological and geophysical surveys of the main oil producing areas of southern Alberta. Preliminary geological surveys will be made, to be followed, where necessary, by more elaborate investigation by means of electrical, seismic and gravitational tests to locate oil-bearing strata. Mr. Templeton will spend about six weeks in the Alberta survey and Doctor Papp will spend most of the summer in the province. It is understood that a party of geophysical prospectors now at work in northern India will later in the season investigate Alberta for British interests.

Ontario Drilling

In Norfolk County, Ontario, Acme Gas & Oil Co.'s No. 4, on the Frank Lymburner farm, Lot 4, Concession 1, North Talbot Road, Middleton Township, got initial production in the Clinton sand at 1,290 feet. It is reported to have been deepened to the White Medina and shot, developing 415,000 feet. The location is a short distance east of Tillsonburg, in a new gas area which the Acme company has been developing, No. 4 being the best producer. Tillsonburg Oil & Gas Co. has brought in a gasser with an initial open flow of 250,000 feet, and is making a new location. Production from both will be taken by the Dominion Natural Gas Co.

In Haldimand County, Union Natural Gas Co.'s No. 195, Lot 8, Concession 5, Rainham Township, has finished with a production of 35,000 feet. Union's No. 202 has been located in SE, Lot 9, Concession 5, Rainham. Union's No. 194, Lot 22, Concession 7, Walpole Township, is drilling.

GAS WELL COMMITTEE REPORTS ITS PROGRESS

(Continued from Page 107)

20 to 30 per cent of the "open-flow" capacity of the well. This is not applicable to gas wells in all parts of the country.

Fuellhart[1] discusses the results of some studies that were made on a group of high-pressure natural gas wells in Louisiana to determine a method of measuring the capacity of the wells to deliver gas without the necessity of "open-flow" tests. The plan consists of the original idea of plotting the rates of delivery at different back preasures against the respective differential pressures through the sand, and then applying the principles discussed by Bennett and Pierce to determine the "open flow." The method is strictly applicable to the conditions under which the tests were made.

H. R. Pierce, consulting engineer of the Bureau of Mines, originated the plan of plotting on logarithmic paper the rates of delivery from a gas well against the corresponding differences of the squares of the formation and back pressures. When the data are plotted in this way,

[1]Fuellhart, D. E., The Open Flow Capacity of High Pressure Gas Wells as Determined by the Pressure-Capacity Curve Method, The Oil and Gas Journal, May 9, 1929.

the relation is represented by a straight line. This simplifies the analysis of the data very much. Basicly, of course, it is possible to write a more or less complicated formula for this straight-line relation. However, for ordinary deductions and analyses of gas well conditions and abilities to deliver gas, it is necessary to use only the plotted straight line as a basis and not resort to the use of a formula. The extension of this straight line on the logarithmic paper makes it possible to read directly the rate of delivery corresponding to any relation between formation and back pressure, one of the relations being "open flow." A discussion of the technical phases of this method of analyzing gas well deliveries has been given in two Bureau of Mines Reports of Investigations.[4]

Work of the Committee

The committee on gas well delivery capacities has been studying actively this problem of gas well deliveries during the last year. The developments discussed previously in this report have been used as a basis to determine the actual data needed for a comprehensive study of the problem; and a survey of all the natural gas fields in the country, accompanied by actual back-pressure tests on as many gas wells under as many different conditions as possible, is being made.

During this first work, the committee has concentrated primarily on the actual measurement of deliveries at different back pressures and the use of these data as a basis to define the capacity of the well for proration and regulation purposes. The program of this initial study includes the following objectives:

1. Test a large number of gas wells with the back pressure method. Selections should be made so that the final data will represent all parts of the country, and apply to wells under as many different operating conditions as possible. Numerous data undoubtedly will be required to devise a basis for defining gas-well deliveries for proration and regulation purposes, which can be advocated generally.

2. Study the consistency with which the data from the gas-well tests conform with the straight line relation when the rates of delivery are plotted against the respective differences of the squares of the formation and back pressures on logarithmic paper.

3. Compare the actual "open-flow" gauges of the gas well with the "open-flows" determined from the back-pressure method of testing.

4. Study the agreement of the relations plotted from the back-pressure method of testing when data are observed at different times in the lives of individual wells. Note especially possible changing conditions in the wells that will explain apparent inconsistencies.

5. Devise methods of observing pressures and measuring rates of delivery so that definite recommendations can be made to satisfy the requirements of any gas well test.

6. Determine the effect of water, salting or clogging of the sand, caving, etc., on the use of back-pressure tests as a basis of gas-well deliveries.

7. Study the application of back-pressure methods of testing to both consolidated and unconsolidated formations.

8. Simplify as much as possible methods of testing, computation of data, and analyses of results.

9. Determine actual conditions of pressure to which different types of wells should be subjected during a back pressure test.

10. Conduct any special experimental tests needed to analyze data that are obtained from back-pressure tests on gas wells.

Progress of the Study

This outline has been followed closely during the work of the past year and while sufficient data have not been obtained and analyzed to warrant final definite recommendations, a few statements as to the progress of the study will be beneficial and serve as a basis for constructive thoughts for the finishing of the work. These statements will be made very briefly in the same order as the above program outline.

1. Representative tests already have been conducted in Oklahoma, Kansas, Louisiana, Texas Panhandle, California, West Virginia, Montana and Wyoming. Several hundred gas wells have been tested and analyzed as to their abilities to produce gas against different back pressures.

2. The data from the gas-well tests have conformed very consistently with the straight-line relation when the rates of deliveries are plotted against the respective differences of the squares of the formation and back pressures on logarithmic paper. This straight-line relation has not been applicable in some cases and it is these exceptions that are now being carefully analyzed.

3. Where possible, a comparison has been made between actual "open-flow" gauges of the gas wells and the "open-flows" determined from the back-pressure method of testing. The agreement is sufficiently close for all practical purposes after the data from the "open-flow" gauges themselves are studied and analyzed. There are inconsistencies in such a comparison. In the first place, the "open-flow" gauges are not often taken under settled conditions. This is especially true of wells producing gas from tight formations. The "open-flow" gauge, in such cases, represents only a limited amount of the time that the well is allowed to "blow open," while in the back-pressure tests, settled conditions are obtained before observations are taken. Also, developments during the last year indicate that "open-flow" gauges as computed from pitot tube readings have, in many cases, been in considerable error. It has been felt that in practically every case the back-pressure test has more truly indicated the actual ability of the well to produce gas.

4. The agreement of the relations as plotted from the back-pressure method of testing when wata are obtained at different times in the lives of the individual wells is a problem requiring more history. In a few cases a subsequent series of back-pressure tests have been conducted, but after only a brief elapse of time from the first series of tests and only after some unusual change of conditions in the wells. For instance, a series of tests were conducted on the wells in a field prior to the heavy winter "pull" and after very light operation during the summer months. Unusually cold weather necessitated a hard "pull" for several weeks. Back-pressure tests conducted after this hard "pull" indicated that there was a considerable decrease in gas availability; in other words, the rate of delivery under "open-flow" conditions, or any other pressure conditions, had decreased much more than should have been the case for the amount of decrease in formation pressure. Whether this field will again increase its gas availability after a "rest" is problematical; another series of back-pressure tests will give this information. Problems of this nature are of importance in any gas field.

Accuracy of Apparatus

5. A careful study of the applicability and the accuracy of apparatus used for the observation of pressures and for the measurement of rates of delivery has been made during the program of gas-well testing. Spring test gauges can be used for pressure observations, but they must be in "first-class" condition. The gauges should be accurate to within 1 pound per square inch for data which will indicate accurately the delivery capacity of a gas well. Such accuracy can be maintained only by handling the gauges very carefully and calibrating them often with a dead-weight tester. During a testing program, each gauge used should be calibrated at least once daily. An important factor that has been noticed during the well testing program is the necessity of shading gauges from the sun. A special test showed that the temperature change resulting from submitting a gauge to the direct rays of the sun should change the calibration of it by as much as 2 pounds per square inch.

A special series of experimental studies have been conducted to obtain data which can be used as a basis for recommendations of the actual measurements of gas-well deliveries. Most of this work has been limited to a study of the critical-flow prover. Four complete sets of orifice plates, ranging in diamater from one-sixteenth to 1½ inches have been calibrated for use with a 2-inch critical-flow prover. Four sets of plates ranging in diameter from one-eighth to 3½ inches have been calibrated for use with a 4-inch critical flow prover. The calibrations were made with a special installation of two 6-inch orifice meter settings in parallel connected directly to a gas well with an "open flow" of approximately 90,000,000 cubic feet per 24 hours. The orifice plates in the critical-flow provers were connected in series with the orifice meter installations, and the orifice meter measurements were used as a basis for determining the proper coefficients applicable to the discs for the critical-flow prover. This has furnished measurement facilities to allow simultaneous testing programs in different gas fields. The basic measurement studies have given invaluable data which will greatly simplify later routine testing programs. For instance, the calibration tests on the four sets of discs for the 4-inch prover indicate that actual calibrations will not be needed for the larger sizes of discs. The discs, if made carefully to conform to size and if the orifice edges are properly finished, can be used with the basic coefficient determined by these first tests. Other valuable results of the tests are apparent but no definite statements are possible until all of the data obtained are analyzed thoroughly.

6. The effects of water, salting, clogging, caving, etc., have been apparent in numerous cases during the well-testing program, and in most cases the effect has been to decrease the gas availability. These effects can better be discussed after this year's testing program and after the data are analyzed more thoroughly. No attempt has been made so far to concentrate specifically on these special phases.

Comparative Data

7. The past year's work has given numerous data on the comparison of consolidated and unconsolidated formations. A special program of well testing has been conducted throughout the Texas Panhandle. This area is an excellent field laboratory for such basic work, since the formations are very much unconsolidated and there are numerous conditions of production. The first work in this area indicates that the straight-line relation is applicable but that certain reservations and precautions have to be used in analyzing the data.

8. Methods of testing, computing the data, and analyzing the results of the tests are being simplified as much as possible. There is no need of over resorting to a formula of any kind in any of the computations or analyzes; the plotted relation and specially prepared tables furnish the basis for all computing and analyzing of results. The specially prepared tables can be used instead of the charts explained in Reports of Investigations, Serial 2,929. These computations can be made easily and quickly with only limited "practice."

9. In many of the gas-well tests, especially where the formations were tight and the wells settled slowly to steady working conditions, the deliveries measured at extremely high back pressures were inconsistent with data at lower back pressures. For instance, in several of the tests, data obtained at back pressures greater than 95 per cent of the rock pressure were not consistent with the straight-line relation resulting at the lower back pressures. A thorough analyses of this condition has not yet been completed and whether this is characteristic of the wells or due to some inherent error or testing or computing is still problematical. However, it might possibly be necessary to determine ranges of pressure conditions for different producing conditions which will most accurately indicate the delivery capacity of a gas well.

Special Tests

10. A special series of tests have been conducted to determine the accuracy of measurement of gas-well deliveries with a pitot tube. Since the pitot tube is the basis for all available data on "open-flow" measurements of gas wells, it is necessary to understand thoroughly the accuracy of these measurements. This special study was undertaken to check the application of Reid's "open-flow" tables to the Texas Panhandle conditions and equipment used there for "open-flow" determinations. The same experimental installation was available for these tests that was used for the calibration of the discs for the critical-flow prover. The conditions of flow found by Reid in his experiments were checked within reasonable limits. However, there was a slight variation in the actual coefficients which probably is due to the difference in design of the pitot tubes used for the experimental work and also the character of the gas.

Some very interesting tests were made to determine the effect of a swage on the measurement of gas with a critical-flow prover. The 4-inch outlet connection on the experimental installation was swaged down to 2 inches, a 2-inch gate valve was installed, and then a 2 to 4-inch swage was screwed in the gate valve. The 4-inch prover was installed directly downstream of the swaged fittings. Tests were made with a wide variation in rates of flow and the pressure drop across the swage varied from 1 to approximately 125 pounds per square inch. There was no change in the coefficient due to the installation of this swage under any of these conditions of flow and it was assumed, therefore, that the critical-flow prover can be used for the measurement of deliveries from gas wells, when back pressure tests are being made on them, without causing any errors in the measurement of the rate of delivery or in recording the well head pressure. It is necessary, however, that the well-head pressure be taken upstream from the smaller size of fittings and the pressure used in the measurement computations be taken downstream from these fittings or just upstream from the critical-flow discs in the prover.

All of the data relating to special experimental studies and to the program of back-pressure tests of gas wells are being recorded and analyzed as thoroughly as possible in individual reports as the work progresses. Therefore, when the actual field studies of this first phase of the gas-well delivery problem is completed, the data will be in understandable form for a final study and analysis and ready for the inspection of the members of the committee.

In addition to the capacity tests made on operating gas wells, some preliminary experimental tests have been made to determine the character of flow through different sizes and kinds of porous metals, mainly screened sands. This sand is packed tightly in specially constructed flow tubes. The many varying factors can be kept under control and it is easier to study any one factor than from tests on actual gas wells. This first preliminary work, incomplete as it was, has shown clearly the possibilities of such experimental investigation and it is planned to make further studies this summer to determine the effect of the many possible pressure conditions, porosity, permeability, grain size, type of formation, water, temperature, and the many other factors that influence the delivery of gas into a well bore. The results of such experimental tests together with the results of the tests from the gas well testing program will give a complete file of data on the problem of gauging gas well deliveries.

The first basic study of gauging gas well deliveries now in progress will be completed as soon as possible. This basic study is the groundwork for the many important research problems of gas production, and when it is completed, the gas-well delivery committee will be ready to broaden its scope of activities to include studies of all of these problems.

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[4] Pierce, H. R., and Rawlins, E. L., The Study of a Fundamental Basis for Controlling and Gauging Natural Gas Wells. Part 1. Computing the Pressure at the Sand in a Gas Well, Bureau of Mines Reports of Investigations Serial 2,929, and The Study of a Fundamental Basis for Controlling and Gauging Natural Gas Wells. Part 2. A Fundamental Relation for Gauging Gas Well Capacities, Bureau of Mines Reports of Investigations Serial 2,930.

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Branches Throughout the Oil Fields.

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Wanted—Leases, royalties and production in shallow drilling areas, Oklahoma and Kansas. Must have maps, all data first letter. Name lowest price and terms. Forming large royalty and lease company. Need few more parties invest from $500 to $5,000 to become directors, form foundation. Then we have large financial house that will list our securities. Exchange raise plenty finances. Our plan safe. Will drill no wells. Address M. Wilson, 6357 Stewart Ave., Chicago, Ill., for information.

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SAN MATEO COUNTY, CALIFORNIA
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OIL located before drilling. Geophysical method. Toggodometer Instrument; take pay in oil. No oil, no pay, except traveling and testing expenses, 95 per cent accuracy. O. P. Coffin, Caddo, Tex.

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H. A. Binford, Manager

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Major oil companies working out the geology and if a good structure is shown a block of acreage is leased for development. At from $2.50 to $5.00 per acre I can sell you forty acre or eighty acre leases adjacent to such blocks located in the Permian Basin of West Texas and Southeastern New Mexico where such pools as Big Lake, Yates, Hendricks, Church & Fields and Hobbs have already been discovered and where more than 100 wells are now drilling. Address P. O. Box 548, San Angelo, Texas.

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320 acre lease, located 36-17-26w Ness County, Kansas, just 1½ to 2 miles northwest of Continental discovery well. A bargain if taken at once. Call or write Federal Tax Company, 409 Braniff Bldg., Oklahoma City, Okla.

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EAST TEXAS ROYALTIES on geology head of production with wildcats drilling close. Sensible prices and individual direct deeds. See maps and geology and pick your own play. Wells drilling make promptness important. R. R. Fisk, 1214-C. Wichita Falls, Tex.

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ROYALTIES—PRODUCTION

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E. T. MARION
Phone 41 Gladewater, Tex.
Care Dr. E. L. Walker's Residence

BEDROCK ROYALTY PRICES ahead of drilling on major company blocks. $6 per square mile. Perpetual deeds and title warranty. Clearly stated and understandable interests. See maps and bulletins. R. R. Fisk, Box 1214-B, Wichita Falls, Texas.

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THE OIL AND GAS JOURNAL
TULSA OKLAHOMA

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ROYALTY: For sale under Joiner block, now drilling, in Nacogdoches County, Texas. O. P. Deaner, Box 8, Nacogdoches, Texas.

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MAPS
Send for list.
THE M. H. HUNTER. CO.
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OIL DEVELOPMENT maps, any county in Oklahoma, 75 cents each; lease block and detail maps. Write for map list. Lindsay Map Co., Franklin Bldg., Oklahoma City, Okla.

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The Kansas Blue Print Co.
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EAST TEXAS MAPS. Gregg and Northwestern Rusk Counties. Oil Development, Survey Boundaries with survey index easily followed. Paper, 20"x24", $2.00 each. Tulsa Map Co., 509½ S. Boulder, Tulsa, Okla.

M-A-P-S

We have the only complete line of general area, lease ownership and oil development maps in East Texas.

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TURN TO PAGE 139 FOR ADDITIONAL CLASSIFIED ADS.

Little Spot Market in Chicago Area

Major Companies Turn Backs on Hand to Mouth Jobbers. Effect of Third Grade Gasoline Becoming Evident

By Robert C. Conine

CHICAGO, May 18.—So far as the majority of larger refiners are concerned, events of the past week disclosed the spot market is a nonexisting thing, and the smaller refiners are at liberty to commit hari kari in the Chicago district by continuing to sell below cost. The major interests have practically turned their backs to the "hand-to-mouth" jobber who fears to commit himself to any large quantity of material lest the price drop an eighth of a cent on the morrow. The markets are going to improve in a few weeks, say the leading refiners, and a waiting policy is indicated.

This does not mean that the majors are prepared to sit back quietly and let events take their course. Far from it, the larger interests have shown a remarkable fondness for what they consider their rights in the marketing field and their steps to secure these rights are telling heavily on the numerous other marketers who have, it is claimed, profited from the ills of the industry without the inconvenience of having to pay prices which would be representative of the cost to a major company of finding and bringing the crude oil to a finished stage.

The larger refiners report the best contract business in years, and their assertions are strengthened by the fact that jobbers are not getting the overflow from contracts that marked the past seasons. "We could depend on a nice business," said one jobber, "from people who needed material beyond the minimum of their contracts with the big refiners. We are not getting this business now and it is evident that the buyers are taking all their contract will allow them."

Situation Explained

This situation is easily explained. The U. S. Motor gasoline spot market ranges in price from 2¾ to 3 cents, with a decreased quantity of material available at the lower figure. Where the price offered in the contract is below the 2.75-cent market it is obvious that the contract will be drawn on to the fullest extent.

Taking three points in the territory, Chicago, Milwaukee and St. Louis, we see that the jobber's contract gives him an advantage over the spot market. In Chicago the margin offered on the contract ranges from 5.5 to 6 cents below the posted service station price of Red Crown gasoline. In Milwaukee the margin is regularly at 6 cents below Red Crown, and at St. Louis one of the larger refiners is offering a margin of 6.25 cents.

At Chicago the service station price of Red Crown is 11 cents, excluding the 3-cent tax. Deducting 2.38 cents to obtain the Group 3 figure, we have 8.62 cents, and from this is subtracted the 6-cent margin, leaving the price to the jobber 2.62 cents. At Milwaukee the Red Crown service station price is 11.1 cents, without the 4-cent tax, and subtracting 2.61 cents to obtain the Group 3 figure, we have 8.49 cents. Deducting the 6-cent margin, we find the price to the jobber is 2.49 cents. At St. Louis the Red Crown market at the service station is 10.4, excluding the 2.5-cent tax. Taking 1.98 cents for the group leaves 8.42 cents, and subtracting the 6.25-cent margin offered by the larger refiner we get the price of 2.17 cents the jobber pays for the gasoline.

The argument is cinched by the prevalence of complaints on the part of jobbers and brokers that the refiners are giving the small buyers on the spot market the same breaks enjoyed by the jobbers.

Tank Wagon Competition

Going from the tank car situation to that of the tank wagon we find further indications of the almost frantically competitive status quo. In the Chicago division the Q.D.A. generally in effect on 1,000 gallons or more per month is: Ethyl, 4 cents off tank wagon price; regular, 3.5 cents off tank wagon price: third grade, 2 cents off tank wagon price. However, a small number of the larger marketers are giving the buyer much better than this. Offers of 5 cents and 5.5 cents are reported to be winning over stops to these marketers. If the other marketers are planning to do something about this they have given no indications of the fact.

In respect to the retail end of the business, an important development in the matter of lubricating oils is looked for any day. The retail price on this product was lowered not long ago, but there are numerous indications that another reduction is in the offing. Competition from price cutters is hardly to be blamed for the expected lowering of the lubricating oil prices, as trackage station operators have had far less success with their 10-cent lubricants than with their U. S. Motor gasoline or its approximate equivalent. And, although the custom of giving away a quart of lubricating oil with each gasoline fill has spread, this may be considered a negligible factor in the marketing trend.

Effect of Third Grade

There seems to be some confirmation of the suspicion that the third grade of gasoline is cutting into the gallonage of the regular grade. At least two of the major refiners admitted last week that the third pump had taken its toll at the filling station, but with the added information that the increase in gallonage at these service stations more than makes up for the damage. Quite unexpectedly, the information was also forthcoming that Ethyl sales have increased substantially.

The third-grade gasoline situation is still in hazy state with scores of conflicting accounts heard in the different quarters. The introduction of the cheap competitive fuel, which is a straightrun U. S. Motor gasoline of poor antiknock quality, has been looked upon variously as a "godsend to the industry" or as "a terrible mistake from which the industry will be long in recovering." There seems to be sufficient grounds for stating, however, that the regular grade will soon occupy a much better relative position to the third grade than at present.

Antiknock Demand Increases

Brokers and jobbers continue to report an increased demand on the part of their customers for gasoline of good antiknock rating. The octane number of gasoline is becoming an important factor and it appears that automobile owners, excepting those who have the omnivorous models of antiquated engine design, are beginning to feel strongly the sacrifice they make to price by purchasing the third grade, whether at the trackage station or at the pumps of the majors.

A marked tendency to hold on to the cracked gasoline output of their plants is noticeable among the larger refiners. Not many of the smaller refiners produce cracked gasoline, and crude oil such as that of Mirando Field (Southwest Texas), which yields a gasoline of high antiknock rating on straightrun operations, is decidedly uncommon. There is plenty of East Texas and Oklahoma City gasoline available in the Chicago district, but the quantity of cracked gasoline is small.

Helpful to Straightrun

"The third-grade gasoline," one of the major refiners said, "will move a lot of our straightrun product out. When the Great Lakes gasoline pipe line begins operation we will have a better ratio between our supplies of cracked and straightrun gasoline. We are marketing a 70 octane number gasoline for the regular grade and so it is easy to see that although our cracked gasoline is of unusually high antiknock value we would soon have huge stores of straightrun gasoline on our hands but for the market outlet presented by the advent of the third-grade gasoline.

Sees Better Prices in June

"We have practically withdrawn from the spot markets as our quotations are above the going prices, but we have done so with the expectation that the next 10 days will see an upward turn to a level where the losses now attending marketing will not be experienced. At the latest, the middle of June should find the industry well on its way to normalcy."

This refiner pointed out that there are a large number of practically uncontrollable factors which may break into the picture and throw the entire scheme of things into chaos. Among these things are a breakdown of the crude oil production curtailment programs; Russian and Rumanian drives into the markets, and slackened demand for gasoline.

There has been no complaint about the demand for gasoline. This has been unusually good and with the fine weather now prevailing in the Chicago district record-breaking sales are confidently expected. When the customer buys gasoline at the filling station in this territory he sees plainly how much he is paying for the gasoline and how much he is paying to the State (and sometimes the city) in the form of a tax. In Missouri, where the state tax is 2 cents, and in Illinois, where the tax is 3 cents, this contribution to the state would probably go unnoticed but for the fact that it is practically the same as the refinery price. But in Indiana and Wisconsin, where the customer sees that he is paying 11 cents for the gasoline and 4 cents to the State (on the third grade 9 cents for the gasoline), filling station attendants say that customers view the State's portion with a watery and jaundiced eye.

Great Bargains in Sight

"Now that the industry is in a sinking spell," one marketer who handles large quantities of East Texas gasoline and light distillates in this district advises, "the time is ripe for buying into the business. Great bargains are on every hand. Refiners and bulk station operators, as well as trackage station owners, who have become panicky are not difficult to find and they will sell at practically any figure."

A fact which gives some color of truth to this marketer's statements is the new business which has sprung up practically overnight. This is the broker in second-hand equipment. While there have always been sources of used material available, these sources had not attained the status that has been suddenly theirs, that is, the position as a pretentious going concern, administered in accordance with the accepted formulas and graphs of big business.

The smaller refiners and jobbers, according to assertions of several of these, must stay on their toes. The least delay on the part of either in filling an order, they say, will often mean the cancellation of the order. One jobber reports two such cancellations the past week because the refiner was unable to ship at the time specified and the price dropped an eighth of a cent in the brief interim. In this case the refiner had to stand the eighth cent difference.

At the close of the week none of the major companies had met the quarter of a cent reduction in the service station price of the third-grade gasoline made by Sinclair Refining Co. The Stanolind Blue price is 8.25 cents in Chicago. Another of the larger marketers, whose activities figure more importantly outside of this district, has posted a price of 7.5 cents on the third grade at nearly 30 service stations in Chicago. All of these prices are exclusive of the 3-cent tax. Points in the territory where the Stanolind Blue price is below normal are: Chicago, 8.25 cents; Peoria, 8 cents; Des Moines, 6.9 cents; Sioux City, 6.9 cents; Detroit, 8.1 cents; St. Louis, 7.4 cents; St. Joseph, 6.9 cents, and Wichita, 5.8 cents.

Blended Gasoline

The 50-52 gravity, 437 endpoint naphtha generally used in this district for making blended motor fuel is having a good demand and no excess of this material is reported. The popularity of the blended motor fuel is properly ascribed to the low natural gasoline markets. The increased use of natural gasoline has apparently had no effect in raising the price of this product. In fact, a better price is considered impossible until the U. S. Motor gasoline markets show a marked improvement. The blend is being used to meet the third-grade competition and is offered at the service stations at 7 cents plus 3-cent tax. This naphtha has a price range from 2⅞ to 3 cents, and this market seems to be holding. The 450 endpoint naphtha of the same gravity is in little demand at 2⅝ to 2⅞ cents. The natural gasoline prices are unchanged: Grade A, 1¾ cents; Grade AA, 1⅜ to 1½ cents; Grade BB, 1⅜ cents.

Kerosene

Kerosene has lost some of the firmness in price it has been showing, in spite of the fact that an increased movement is reported. The warmer weather is bringing kerosene into demand as a tractor fuel, and there are indications that less kerosene will go to cutting distillate with the result that less distillate will be drawn upon as an engine fuel. With kerosene selling at 2⅝ to 2½ cents for the 41-43 water white, and 2½ to 2¾ cents for the 42-44 water white, one major refiner reported that he was getting more for his kerosene than for his gasoline. Then, too, the blending of kerosene with natural gasoline is a not unheard of thing.

Furnace Oils

The warm weather has virtually closed the furnace oils market. With straw distillate reaching a startling low of 1½ cents, more than one marketer has announced his withdrawal from this market, preferring to store the fuel for winter. The 32-36 industrial gas oil is at an unprecedented low of seven-eighths of a cent. Zero 32-36 gas oil is at 1⅜ to 1⅝ cents.

Along with the impetus given to the city's campaign against smoke and soot, by the impending advent of natural gas, come further indications that the city of Chicago is planning to depend more on the oil industry. The agitation for a smokeless Chicago has reached the ears of an oil burner manufacturer of Los Angeles, Calif., and this manufacturer is setting about to learn if there is a suf-

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East Believes Bottom Has Been Reached

Production Proration Measures in Mid-Continent Expected to Help Create a More Stable Refined Price Situation

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, May 18.—Refinery gasoline was again reduced this week, the market going into new low ground for the year, and the unsettlement in the refinery price basis was reflected in further disturbance in retail markets, where selling prices were again lowered by most sellers, although posted schedules remained unaltered. Minor products were also displaying weakness, although no general price revisions developed.

With leading sellers down to 5¾ cents per gallon for U. S. Motor gasoline in tank car lots at refineries in this area, it appears that a determined effort will be made to keep distressed Gulf Coast and California gasolines from further depressing East Coast markets. However, Gulf Coast gasoline can be bought as low as 4¾ cents laid down at New York, and with a number of distressed tankers laid up at California ports, and available for intercoastal movement of gasoline, there is a possibility that California gasolines may be dumped here at prices low enough to make their marketing profitable to independents.

Although all of the week's news in relation to refined products was bearish in tone, there appears to be a growing belief in some quarters of the market that refined products have just about hit bottom on the current price move, and that the effect of crude petroleum proration measures will soon be apparent in a more stable price structure for products. Many sellers who have carried out what virtually amounts to a campaign of liquidation since the start of the year have now adjusted their inventory position to a more satisfactory basis, and it is felt that these sellers will now be inclined to devote more attention to prices and less to gallonage.

It is a foregone conclusion that the summer gasoline campaign will be far from satisfactory, from the position of selling prices, but many major interests are now convinced that the season, while unfavorable from many standpoints, will still show better results than earlier indications had pointed to.

Refinery Gasoline

Further unsettlement developed in the refinery gasoline market in the East this week with the action of the Standard Oil Co. of New York in reducing its posted tank car price one-half cent to 6 cents per gallon at New York, this reduction following a three-quarters cent decline by Standard Oil Co. of New Jersey to 5¾ cents, New York Harbor. The present range quoted locally is 5¾ to 6¾ cents per gallon at terminals, the latter quotation being for California gasoline, and the market is far from steady at the inside figure. Other East Coast market centers show similar wide ranges, as follows: Philadelphia, 6 to 6½ cents; Portland, 6½ to 7 cents; Boston, 6¼ to 6¾ cents; Providence, 6¼ to 6¾ cents; Baltimore, 6 to 6¾ cents; Norfolk, 6 to 6¾ cents; Jacksonville, 6 to 6¾ cents.

Demand for gasoline has held up fairly well, notwithstanding cold rainy weather during the week, but there are more sellers competing for jobbers' business now than ever before, and competition is still showing a decided tendency to take the form of price cutting.

While East Texas gasoline can still be laid down at New York at prices under the inside level of 5¾ cents quoted for U. S. Motor here, handling and storage charges on the Gulf Coast product are such that there is little profit in sight in handling the "outside" product.

Although East Coast refiners are reputedly losing money on current gasoline sales, their replacement costs are lower and in this manner they will in most instances be able to average their selling prices for the season. Refiners operating in this territory, however, have given a decided indication of the firm steps which they are prepared to take to keep their territory from becoming the dumping ground for distressed low priced gasolines from other refining areas, and it is evident that small refiners in other areas, even with the benefits of extremely low priced crudes, and the absence of higher cost inventories to worry them, will run into stiff competition in their efforts to unload their current output in East Coast markets.

Notwithstanding a further curtailment in operations by East Coast refiners during the week ended May 9, during which period refineries were run at 72.2 per cent of capacity against 74.3 per cent in the preceding week, gasoline stocks increased from 8,453,000 to 8,716,000 bbls.

Tank Wagon Gasoline

Lower gasoline prices in the wholesale market have been accompanied by a further weakening in tank wagon markets, and prices are sliding off all along the line, although "officially" no revisions have been made.

Leading brands of motor fuel are retailing in New York City at 8 gallons for $1, tax included, which means a gross of 10½ cents per gallon at the pump, and a netback of approximately 4 to 4½ cents per gallon to the refiner.

Eastern markets, particularly in the larger cities, are in a chaotic condition, from the price standpoint, and it is expected that the principal marketers will take drastic steps to put the market on a more orderly footing.

Notwithstanding the fact that this is the season of the year when tank wagon and service station prices are normally on the up-grade, the present situation calls for a reduction of 2 to 3 cents per gallon in posted prices in order to get the market on a sound footing. It is problematical, however, if the large companies would be willing to depress their posted quotations this much at a time like the present, but continued delay in taking definite action is tending to still further disorganize the price structure throughout the territory.

An interesting phase of the present situation is that notwithstanding the fact that independent marketers are in position to offer retail gasoline dealers substantial concessions on term contracts, the major marketers are holding their retail distributors in line, and the independent, or so-called "gyp" brands are gaining comparatively little headway, save in the few instances where independents in the field are undertaking the building up of directly owned or controlled retail stations.

Kerosene

The posted price of water white kerosene in tank car lots, at 6 cents per gallon, is a quarter cent higher than the inside price posted for U. S. Motor gasoline, but the 6 cents figure on 41-43 water white is merely nominal, and the bulk of the business is going through at 5¼ cents to 5½ cents, with indications that 5 cents might be done in one or two directions. Demand continues rather light.

Tank wagon kerosene gallonage has shown a little impetus during the past week, under the stimulus of cool and rainy weather, but the volume is still under marketers' expectations for this season of the year, and the market is draggy. Prices remain unaltered.

Lubricating Oils

There has been a little increase in domestic demand for cylinder oils during the week, and with this quickening in buying interest has come some lightening in selling pressure, all of which has combined to make for a slightly better undertone. Quotations remain unchanged at the lowered levels put into effect during the preceding week, but with seasonal increase in consumption now making itself felt, traders here are inclined to look for a turn for the better in the general market situation.

Red and pale oils were again without price change during the past week. Routine demand for industrial oils is reported, with consuming manufacturers in most instances drawing stocks only when actually required for immediate and nearby consumption.

French inquiry for lub oils has been the lone feature of the export division of the market, with indications that the bulk of this business would be handled by large integrated companies with French marketing subsidiaries or affiliates.

Fuel Oil

The market for bunker "C" fuel oil has gone through the week unchanged at 95 cents per barrel, in bulk, f.o.b. refinery terminals, with the usual lighterage for delivery alongside within the harbor limits. Demand has been well maintained throughout the week, but the market tone is weak in sympathy with easy fuel oil markets at the Gulf and in California.

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CLASSIFIED WANTS

(Continued from Page 137)

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POSITIONS WANTED

A FORMER Chicago manufacturer opening sales office in San Francisco will consider proposal from eastern manufacturers desiring Pacific Coast representation. Write Box E-477, The Oil and Gas Journal, Tulsa, Okla.

A GRADUATE chemical and mechanical engineer thoroughly capable as refinery superintendent or manager through 10 years varied experience in refinery management with major oil company desires permanent position immediately. Write Box E-478, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST — 12 years' experience, executive position, major oil company, land and geological depts., desires connection with responsible parties. Nominal salary and interest preferred. Write Box E-484, The Oil and Gas Journal, Tulsa Okla.

MIDDLE-AGED business man, just relieved from position on account of merger, will consider proposition from a reliable concern wanting office executive or business manager. Any legitimate line of business will be considered. Address Box E-444, The Oil and Gas Journal. Tulsa, Okla.

DESIRE CONNECTION with producer who would be in a position to furnish 1,500 bbls. of high-gravity, Mid-Continent crude per day, also to take financial interest in Canadian refinery. Answer Box E-424, The Oil and Gas Journal, Tulsa, Okla.

PETROLEUM CHEMIST with six years experience in complete oil refining. Gas analysis and knock testing. Available June 10. Write, Box E-485, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST AND PETROLEUM ENGINEER
7 years' thorough practical experience, major oil company, desires connection. Would accept part salary and interest. Write Box E-491, The Oil and Gas Journal, Tulsa, Okla.

CONSTRUCTION, or operating superintendent of casinghead gasoline plants. Qualified to handle several projects in the oil and gas business. Can furnish good reference. Will go anywhere in U.S.A. Write Box E-488, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED

WANTED: Salesmen and Sales Organizations to sell acreage proposition in Tioga Field. Fast selling proposition, must be reliable and furnish reference first letter. Address Tioga Realty & Development Company, Williamsport, Pa.

WANTED: Experienced oil well driller to take a job by the foot in Northern Wisconsin. Material adaptable for churn drilling and rig on the ground now. Want to drill about 1,000 feet as quickly as possible. Address F. E. Taylor, President, Northern Gas and Oil Co., Merrill, Wisconsin.

SALESMANAGER WITH $5,000, to join old New York brokerage house, build up oil royalty sales force and clientele, handling large transactions. References. Parmer and Company, 25 Broad St., New York, N. Y.

YOUNG man with refinery, time keeping and pay roll experience wishes permanent connection with oil company offering future in accounting. C. E. Terry, 422 S. Fredonia St., Longview, Tex.

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Manufacture of Natural Gasoline

Important Problems Given to Technical Committee Past Year

In a report made by R. C. Alden of the Phillips Petroleum Co. as chairman of the technical committee of the natural gasoline association, considerable progress is shown in the problems under investigation. The following report was submitted by Mr. Alden:

"When the present technical committee began to function last May, there were five major problems confronting it. These were: (1) A new grading system; (2) a proposed revision of the A.S.T.M. distillation test; (3) improvements in standardization of the Reid vapor pressure method; (4) federal specifications for motor fuels; and (5) airplane fuel system temperatures. At one time or another during the past year each one of these subjects has received the careful attention of the technical committee, and it is a pleasure to be able to report definite progress for all of them.

"Formal meetings of your technical committee were held July 22, October 22, October 28, November 19, and January 16. Each of these meetings represented the culmination of work done by one or more of the subcommittees or the presentation of reports of work done in the laboratories of the members of the committee.

"This committee has been the third successive technical committee to be assigned the problem of evolving a grading system for natural gasoline which would conform with our improved knowledge of our product and its usage. The discussion of this subject at the convention last year served to clarify the issues at stake so effectively that on July 22 the specifications subcommittee was able to make a definite proposal to the main committee in regard to a new grading system. After the new grading system had been approved by the association the technical committee assisted in the preparation of a press announcement dealing with the new grading system. This announcement

(Continued on Page 142)

NEW RULES WITHDRAWN

The Bureau of Explosives did not approve the revision of rules for loading liquefied gas in tank cars as stated on this page April 30 but instead has laid aside the request by the Shell Petroleum Corp. for such because other natural gasoline manufacturers have objected to any change on the grounds that there is no practical necessity for making it.

OPERATIONS OF PIPE LINES AND CARBON BLACK PLANTS RELATED

By W. E. Reardon
Columbian Gasoline Corp.*

The completion of new gas pipe line systems has been a large factor in causing the record consumption of gas during the past two years, and this has had its effect on measuring the production of natural gasoline.

It is estimated that approximately 85,000 miles of natural gas trunk pipe lines are now in operation in the United States, exclusive of gathering lines and local distributing facilities. The future of natural gas is a question of interest to the industry. Present indications point to further consolidations and to new gas fields of importance shall probably be discovered from time to time. Some of these may be so located with reference to the great fuel consuming centers of the country that extensive markets hitherto not served by natural gas may be opened to the industry.

We may expect a material increase in natural gasoline production within the

(Continued on Page 150)

*Part of a paper delivered before meeting of Natural Gasoline Association of America, Tulsa, May 19, 20 and 21.

OPERATIONS ARE INTERDEPENDENT

The relation of the operations of the natural gasoline industry with those of gas distributing systems and the carbon black industry are outlined in the following article. The rapidity with which natural gas pipe lines are being built into the consuming centers from the Mid-Continent fields means that a larger percentage of the residue gas will be used advantageously. This may also necessitate building additional extraction units of large capacity to rid the gas of fractions that would condense in the lines at their extreme temperature and pressure limits of operation.

A factor acting in the opposite direction, is that of the carbon black industry which is now passing through a period in which consumption of its product has declined to a relatively low point and stocks have been increased sufficiently to take care of the expected demand for many months even though production were entirely stopped.

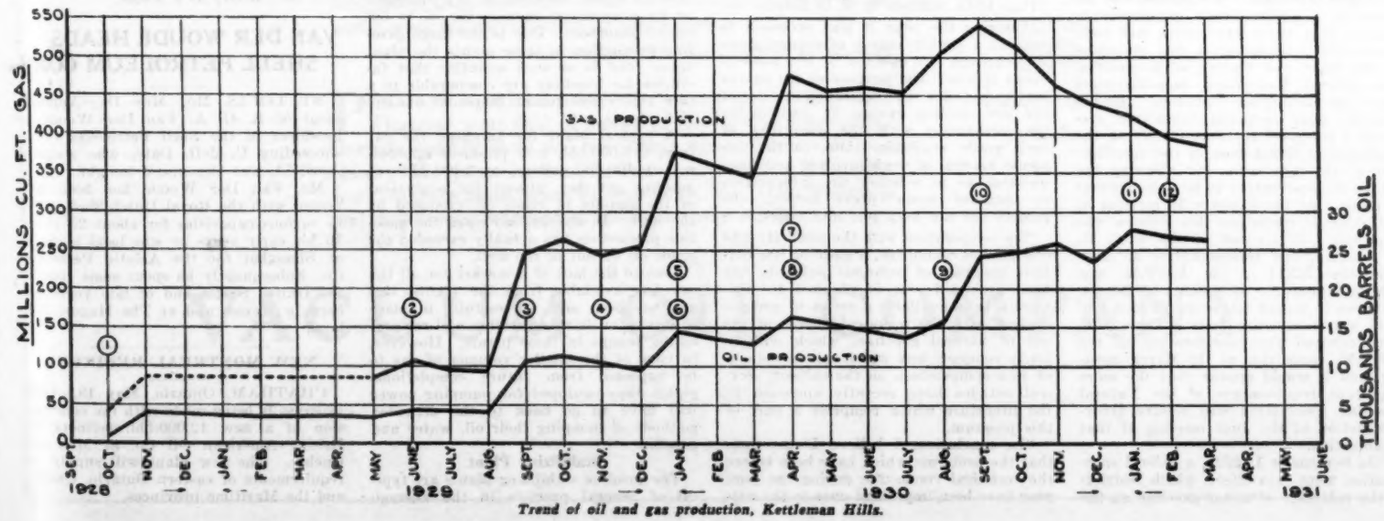
UNUSUAL OPERATING FEATURES AT KETTLEMAN HILLS PLANTS

By C. R. Burgess
Standard Gasoline Co.*

The method of controlling the flow from wells in the Kettleman Hills Field of California is by use of flow beans in the flow lines from the casing, the tubing, or a combination of both, depending upon the mechanical condition of the wells. Multiple stage trap settings for separating the gas and oil was used in all cases. These consist of either two or three stages. The first stage or high pressure traps operate at from 450 to 550 pounds pressure. The second stage or intermediate pressure traps operate at from 50 to 75 pounds pressure. The third stage or low pressure traps operate at from atmospheric to 5 pounds pres-

(Continued on Page 142)

*Part of paper delivered before annual meeting Natural Gasoline Association of America.



Trend of oil and gas production, Kettleman Hills.

TO STANDARDIZE FOUR PLANT REPORT FORMS

As part of the program of standardizing operations among natural gasoline plants in the Mid-Continent area, the Natural Gasoline Association has undertaken a complete investigation of the many forms of reports made up by each of the companies. A report submitted by a committee of the association under A. H. Menuet of the Skelly Oil Co. as chairman recommended the approval by the board of directors of four forms. The investigation included as analysis of six forms namely, bills of lading, distillation reports, orific meter test reports, physical test reports, charcoal test reports and invoices. These were chosen because they offered the greater likelihood for a standardization.

After discussing each of these it was found advisable to drop the question of standardizing the bills of lading. Each company observed a different method of making up the report and includes miscellaneous data which each considers necessary.

Efforts to standardize the form for invoicing was also abandoned in order to permit the Purchasing Agents Association a free hand in working out a standard form.

Samples of the other four forms, including the orific meter report, charcoal test report, physical test report and the fuel gas, electricity or water ticket were submitted for the board's consideration.

BENZINE EXTRACTION PLANT

CHATHAM, Ontario, May 16.—Following small-scale tests at the University of Alberta, arrangements are being made for installation at the Technical Institute at Calgary of a plant for the extraction of benzine from Turner Valley gas. The plant, which will have a capacity of 5,000 feet a day, will be in charge of Dr. E. H. Boomer of the University of Alberta, who conducted the preliminary experiments and evolved the process. The feasibility of the process has been demonstrated, and its commercial possibilities are now to be studied.

The new plant will start operations some time in June. The gas will be raised to white heat, approximately 1,000° C., in specially prepared tubes and the benzine content absorbed by charcoal or oil. A specially constructed furnace will provide the necessary degree of electrical heat. If its commercial practicability is demonstrated, the process will be utilized on an extensive scale.

TECHNICAL COMMITTEE REPORT SHOWS PROGRESS

(Continued from Page 141)

physical interconnections of existing pipe line systems until many of the major gas appeared in the several trade journals shortly after the first of the year. It should be mentioned that too much credit cannot be given for the faithful service rendered by the members of the subcommittee which worked on this problem. For more than two years, with practically the same membership, this subcommittee has worked diligently for the common good.

"The influence of our representatives at the Atlantic City June meeting of the A.S.T.M. was such that the proposed change in endpoint procedure was postponed until the industry had had an opportunity to accumulate and collect data substantiating its viewpoints. After an attempt to find suitable data in the files of the various members of the technical committee, it was decided to conduct a series of tests for the purpose of obtaining the desired information. Samples of 12 blends were sent to each of six co-operating laboratories, as follows: Barnsdall, Empire, Phillips, Shell, Sinclair and Skelly. A definite form of procedure was agreed upon. A lengthy report was prepared and submitted to the technical committee January 16. In this report the following conclusions were reached:

1. "The dry flask method gave higher endpoint values, particularly on gasolines of higher endpoints.

2. "In more than half of the determinations made on average natural gasoline products, distillations would have to be repeated under the procedure proposed by the A.S.T.M. subcommittee.

3. "Deviations from the mean endpoint are less with the dry flask method.

4. "In this co-operative work, 30.8 per cent of the total number of determinations made with the dry flask stipulation fell within the tolerance (±6° F.) allowed for such determinations, while only 18.7 per cent of those made under the proposed procedure were within this range.

5. "Other than the dry flask stipulation, the most important variable in endpoint determination is the capacity of the heating elements (gas burner or electric heater) to supply an intense heat at the endpoint. Because of this fact, even with the dry flask stipulation, unless care is taken to provide adequate gas pressure or electric current, considerable discrepancies may be encountered in endpoint determinations.

"Before leaving this subject, it should be mentioned that the committee was materially assisted by a very complete report on endpoint procedure prepared by W. W. Robinson, Jr., of The Texas Company in California.

"To make certain that the standardization of the Reid vapor pressure method (A.S.T.M. Method D 323-30) was proving satisfactory, the various organizations interested were requested in December to express their opinions in regard to the published procedure. The members of the technical committee were unanimous in stating that their experience had been satisfactory. However, a few operators in the East, the Bureau of Explosives, and several instrument manufacturers were not altogether satisfied. Consequently, your technical committee prepared a proposed revision, clarifying the fundamental dimensions in the specification of the apparatus, but allowing the details of construction to be more general in scope. At the January 16 meeting of the technical committee this revision was approved. As a result of this work, G. G. Oberfell, our representative on Subcommittee XXII of the A.S.T.M. was able to express the viewpoints of this association in regard to the distillation and Reid vapor pressure tests. These subjects received the consideration of the A.S.T.M. committee at its March meeting, and it would appear that the more important requirements of the Natural Gasoline Association will receive favorable action at the June meeting of that organization.

"On September 1, 1929, a federal specification went into effect, which restricted the volatility of motor gasoline on the high side. That this specification was no more objectionable than it is, was due to the energetic efforts of the association through its representative, Mr. Oberfell, and to the co-operation of the Western Petroleum Refiners Association. Since September 1, 1929, the Federal Specifications Board has been attempting to state their maximum volatility requirements in terms of Reid vapor pressure rather than in terms of the 10 per cent temperature, as it now is.

"At the October 28 meeting of the technical committee, a letter was prepared for the board of directors to send to Dr. George K. Burgess of the Bureau of Standards. This action had been prompted by a letter from that official, requesting the association's viewpoint in regard to the most recent vapor pressure specification proposal which had been advanced by the Federal Specifications Board. In substance, the association's reply stated that the proposed 10 pounds maximum vapor pressure limit, as a year round specification, was too low.

"This subject is a very important one to the natural gasoline industry. Specifications which unnecessarily restrict the maximum volatility of commercial gasolines will promptly and effectively curtail the markets for natural gasoline. It is understood that the Federal Specifications Board is now planning a new proposal which contemplated seasonal specifications with territorial provisions. When and if such a proposal is made, it should receive the careful and prompt attention of the technical committee, so that the association may be prepared to defend its interests in co-operation with other interested organizations, such as the Western Petroleum Refiners Association and the American Petroleum Institute.

"The aviation subcommittee, composed of E. C. LeFevre, S. S. Smith, J. W. Vaiden and R. C. Alden, met several times during the year. For various reasons only three planes have been used in experimental work in connection with the fuel line temperature in airplanes in actual flight. The experimental work in this field was discontinued with the advance of fall weather last year. A considerable quantity of data had been collected, particularly for two ships and this has been submitted to Doctor Brown. A paper on the subject was delivered by the speaker before the Chicago aeronautic meeting of the American Society of Mechanical Engineers on August 25, 1930.

"This subcommittee met on February 24 for the purpose of considering future work. At this meeting it was decided that sufficient information had been obtained in regard to airplanes with gravity feed systems, with the exception of very fast planes having the ability to climb rapidly. Because the army air corps and the United States Bureau of Standards are studying this subject very aggressively, further work was not considered necessary at this time. The subcommittee called attention to a very interesting article bearing on this subject, which appeared in the Journal of the Society of Automotive Engineers of December, 1930 (Page 694), written by S. D. Heron.

"During the year it was proposed to conduct a quality survey of natural gasoline through the medium of the association's offices. The purpose of the survey was to expedite and facilitate the use of the new grading system by acquainting the association with the quantities of each grade available. Due to the immense amount of work involved and some question as to whether the information so obtained would prove helpful, the project has not been put into effect.

"In co-operation with the publicity and educational committee, a more or less definite program of technical publicity has been arranged. It is planned to ultimately have available a series of articles dealing with the technical phases of the use of natural gasoline, which will be fairly complete and which can be collected as a compendium on the subject. Several articles have recently appeared in the literature which comprise a part of this program.

"In conclusion, I believe I can state that the problems which have been before the technical committee during the past year have been important ones to the natural gasoline industry. That progress has been possible due to the ready co-operation of the members of the technical committee. These men are to be complimented for their faithfulness to the duties assigned them and the companies which they represent are to be praised for lending their assistance to these co-operative projects.

"The membership of the technical committee was as follows: R. C. Alden, chairman; R. E. Baker, vice chairman; H. S. Cole, Jr., C. C. Chaffee, G. M. Davidson, J. L. Gallagher, Emby Kaye, H. W. Manley, W. A. Melton, W. G. Palmer and E. W. Zublin."

OPERATING FEATURES OF KETTLEMAN HILLS

(Continued from Page 141)

sure. The oil then goes to the flow tanks from where it is gathered in the gathering system. In some trap installations the third stage traps have been eliminated, allowing the final separation to take place in the flow tanks.

The gasoline content and amount of gas from the different traps of such a typical trap installation on a well completed in the upper oil zone, per 1,000 bbls. of oil, is approximately as shown in the following chart:

Trap—	Operating pressure in lbs.	Gas volume cu. ft. per day	Gasoline content gal/MCF	Gasoline available gal/day
High pressure	500	30,000,000	1	30,000
Intermediate	60	300,000	5	1,500
Low pressure	Atmos.	130,000	12	1,560

In the design of the absorption plants that were built to treat the gas from these wells departures from customary practice were incorporated due to the prevailing conditions. The gas is gathered from the traps in three lines for transportation to the plants. The gas from the high pressure traps is brought in through a high pressure line and is treated at 450 pounds pressure in the high pressure absorbers, that from the intermediate traps is brought in through a second line and is treated at from 35 to 50 pounds pressure, that from the low pressure traps and flow tanks is brought in through a vacuum line and compressed for treatment with the intermediate gas in the 35 to 50-pound absorbers.

The oil from both sets of absorbers is run through a common distillation unit, that from the high pressure absorbers being run through one or two vent tanks in the process of reducing the pressure before mixing with the rich oil from the low pressure absorbers. The vapors eliminated in these vent tanks are treated in the 35 to 50-pound absorbers or as plant vapors. The saturation of the absorption oil is unusually high from both the low and the high pressure absorbers, due in the first case to the high gasoline content of the low pressure gas and in the second to the high pressure at which absorption takes place. The distillation equipment therefore is designed for stripping and condensing large volumes of vapors from relatively small oil circulation. The plant vapors are generally handled through vapor absorbers at low pressures or by compressors then to the 35 to 50-pound absorbers. Due to the large gasoline production in these plants the plant vapor load is of such quantity that facilities for handling are comparable to a fair size conventional 30-pound absorption plant.

A typical plant for handling the gas from a 3,000-bbl. well produces approximately 100,000 gallons, or 2,400 bbls. of gasoline per day, almost the equivalent of the amount of crude oil produced by the well. In one or two cases the gasoline production has actually exceeded the crude oil output of the well.

Due to the lack of a market for all the dry gas available from the plants, dry gas has been used successfully in place of steam for driving turbines and reciprocating pumps in these plants. However, in view of the smaller volumes of gas to be expected from future completions, plants thus equipped for pumping power will have to go back to the orthodox methods of pumping their oil, water and gasoline.

Stabilizing Plant

The gasoline stabilizing plants are typical of general practice in the average gasoline plant. The specifications of the gasoline, however, are more strict as to vapor pressure than as to recovery. The specifications have varied from a 13-pound to a 24-pound stock according to the needs of the purchaser for butane.

A fair approximation of the cost of construction of such plants would be about $4 per 1,000 feet daily gas capacity. To date seven gasoline plants have been built, varying in capacity for treating gas from 60,000,000 to 140,000,000 feet per day, with a total combmined capacity for 760,000,000 feet per day.

Gasoline Pipe Lines

The outlet facilities for oil from the field consist of four lines. The General Petroleum Corp. laid the first line out of the field in 1929. This was a 6-inch line connecting at Lost Hills, about 40 miles distant, with their trunk line to Los Angeles. The Union Oil Co., Associated Oil Co. and the Standard Oil Co. have since added lines which carry the oil to marine loading stations on the coast, varying from 80 to 120 miles distant from the field.

The outlet facilities for the gasoline produced at the gasoline plants consist of the Union Oil Co. gasoline line paralleling their oil line to the coast, and the Standard Oil Co. oil line through which gasoline is batched to their marine loading station. This batching of the gasoline through the crude line is possible since all the crude handled by the Standard Oil system is of the light gravity oil and consequently contamination is negligible.

The outlet facilities for the dry gas consists of four lines. The Pacific Gas & Electric Corp.'s 20-inch line and the Standard Pacific's 22 to 26-inch line, a line jointly owned by the Standard Oil Co. and the Pacific Gas & Electric Corp., transports gas to San Francisco and the bay region. These two lines have a combined capacity of approximately 260,000,000 feet per day at the plant discharge pressures of between 400 and 450 pounds. The Southern California Gas Co. has two lines, a 10-inch line to Fresno and valley points and a 20-inch line to Taft thence to Los Angeles. These two lines have a combined capacity for approximately 120,000,000 feet of gas per day. The peak load carried by these lines to date was reached in January of 1930 with the Pacific Gas & Electric and Standard Pacific systems taking 164,000,000 feet and the Southern California Gas Co. system taking 87,000,000 feet per day. This total of 251,000,000 feet sold at that time was approximately 55 per cent of the gas being produced.

The future development of this great structure whose ultimate oil recovery has been estimated in billions of barrels and whose gas production has been estimated as sufficient to supply all gas needs of the State of California for the next 50 years or more will be watched with keen interest by the industry as a whole. It affords an ideal opportunity for oil operators to prove that through co-operative regulation it is possible to develop and control production of such oil resources to the economic advantage of the industry and the country as a whole.

VAN DER WOUDE HEADS SHELL PETROLEUM CORP.

ST. LOUIS, Mo., May 18.—Appointment of R. G. A. Van Der Woude as president of the Shell Petroleum Corp., succeeding U. deB. Daly, who resigned April 11, was announced tonight.

Mr. Van Der Woude has been connected with the Royal Dutch-Shell group in various capacities for about 25 years. In his early years he was local manager at Shanghai for the Asiatic Petroleum Co. Subsequently he spent some time in the United States and of late years has been in Mexico and at The Hague, Holland.

NEW MONTREAL REFINERY

CHATHAM, Ontario, May 18.—Good progress is being made with the construction of a new 12,000-bbl. refinery for British American Oil Co. at Montreal, Quebec. The new plant will supply the requirements of eastern Ontario, Quebec, and the Maritime provinces.

Lost power-dollars *are never lost . . . they* work against you!

Power cannot be destroyed—it must expend its energy in some kind of work, either useful or destructive. The real job of Correct Lubrication is to make as much power as possible work *for* you—as little as possible *against* you. Wasted power piles up extra costs for labor, shutdowns, depreciation and maintenance. The following example shows how Vacuum Lubrication helps to make lost power do useful work—instead of costly damage.

Gas compressors use less power

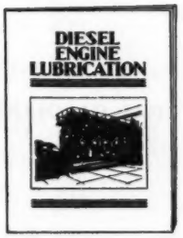
A western gas company using three 200-h.p. gas-engine-driven compressors tested Gargoyle D. T. E. Oil Heavy on one unit, and another make of oil on the other two compressors. Comparison of the frictional temperature rise recorded on bearings was as follows—

	Right Bearing	*Left Bearing*
With Gargoyle	24°	24°
With another oil	30°	36°
With another oil	37°	36°

The Gargoyle Lubricant kept frictional temperature about 30% lower than the other brand of oil—helping power to do useful work instead of piling up other costs.

(From Vacuum Oil Company File No. 62528)

PERHAPS your lubrication costs you too much—in power. Whatever your field of industry, the Vacuum representative can quickly show you how many other plants with machinery like yours have made lost power-dollars do useful work. Address Main Office, 61 Broadway, New York. Branches and distributing warehouses throughout the world.



Diesel Engine Lubrication, Air Compressor Lubrication, Bearings and Their Lubrication, Stationary Steam Engines, Gear Lubrication.

We will send to any executive or engineer, if requested on your company letterhead, one or all of these authoritative treatises on lubrication.

GARGOYLE

Lubricating Oils

VACUUM OIL COMPANY

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

	May 19		May 12		May 5	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.02⅞	.03	.02⅞	.03	.02⅞	.03⅛
56-58 450 endpoint	.02¾	.03	.02¾	.03	.02⅞	.03
58-60 437 endpoint (U. S. Motor)	.02⅞	.03¼	.02⅞	.03¼	.03	.03½
60-62 437 endpoint	.03	.03¼	.03	.03¼	.03½	.03½
60-62 400 endpoint	.03½	.03½	.03¼	.03½	.03¼	.03½
64-66 375 endpoint	.03⅜	.03¾	.03⅜	.03¾	.03⅝	.04
68-70 360 endpoint	.03⅝	.03¾	.03⅝	.03¾	.03¾	.04
64-66 437 endpoint (blend)	.02¾	.03	.02¾	.03	.02⅞	.03
NORTH TEXAS—						
50-52 450 endpoint	.02¾	.03	.02¾	.03	.02⅞	.03
58-60 450 endpoint	.02¾		.02¾		.02⅞	.03
58-60 437 endpoint (U. S. Motor)	.02¾	.03	.02¾	.03	.03	.03½
60-62 400 endpoint	.03	.03¼	.03½	.03¼	.03¼	.03½
64-66 390 endpoint	.03¼	.03½	.03¼	.03½	.03⅜	.03¾
64-66 375 endpoint	.03⅜	.03¾	.03⅜	.03¾	.03½	.04
68-70 360 endpoint	.03½	.04	.03½	.04	.03¾	.04
64-66 437 endpoint (blend)	.02¾	.03	.02¾	.03	.02⅞	.03
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.03½	.03¾	.03½	.03¾	.03½	.03¾
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.03⅜	.03¾	.03½	.03¾	.03½	.03¾
PENNSYLVANIA—						
52-54 Naphtha	.05		.05		.05	
54-56 Naphtha	.05		.05		.05	
58-60 Gasoline	.05		.05	.05¼	.05¼	
60 Gasoline	.05	.05¼	.05¼	.05½	.05½	.05½
62 Gasoline	.05¼	.05½	.05¼	.05½	.05½	
64 Gasoline	.05½	.06	.05⅝		.06	
68-70 350 endpoint gasoline	.06¼		.06¼		.06¼	
CALIFORNIA—						
†54-58 437 endpoint (U. S. Motor) domestic	.03	.03½	.03	.03½	.03	.03½
†58-60 400 endpoint domestic gasoline	.03¼	.04	.04	.04½	.04	.04½
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.02⅞	.03	.02⅞	.03	.03½	.03⅝
58-60 437 endpoint (U. S. Motor)	.02¾	.03	.02⅞	.03½	.03¼	.03½
60-62 400 endpoint	.03⅛	.03¼	.03¼	.03½	.03¼	.03⅝
64-66 375 endpoint	.03½	.03⅝	.03½	.03¾	.03¾	.04
64-66 437 endpoint (blend)	.02⅝	.02⅞	.02⅞	.03	.03	.03⅛
68-70 360 endpoint	.03⅞	.04⅛	.03⅞	.04⅛	.04	.04⅛
GULF COAST (Export)—						
58-60 U. S. Motor	.04¼		.04¼		.04¼	
60-62 400 endpoint	.04½		.04½		.04¾	
61-63 390 endpoint	.04¾		.04¾		.05¼	
64-66 375 endpoint	.05		.05		.05½	

*Louisiana, Arkansas, Mississippi and East Texas delivery. †For local consumption.

NATURAL GASOLINE

	May 19		May 12		May 5	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.01¾	.01⅞	.01¾		.01¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01⅝	.01¾	.01⅝	.01½	.01½	.01⅝
Grade B, 76-83.9, 375 e.p., rec. 85%	.01½		.01⅝		.01½	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01⅝		.01½	
Grade C, 80-92, 375 e.p., rec. 78%	.01½		.01¼	.01⅜	.01⅜	.01½
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.01¾	.01⅞	.01¾		.01¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01⅝		.01⅝	.01½	.01½	.01⅝
Grade B, 76-83.9, 375 e.p., rec. 85%	.01½		.01⅝		.01½	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01⅝		.01½	
Grade C, 80-92, 375 e.p., rec. 78%	.01½		.01¾	.01⅜	.01½	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.01¾		.01½	.01⅝	.01¾	.02
Grade BB, 84-92, 375 e.p., rec. 85%	.01⅝		.01½		.01⅝	.01¾
Grade C, 80-92, 375 e.p., rec. 78%	.01⅝		.01½		.01⅝	
CALIFORNIA—						
75-78 375-390 endpoint	.01¾	.02¾	.02½	.03	.02½	.03
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.01¾	.01⅞	.01¾		.01¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.01⅝		.01¾	.01½	.01½	
Grade BB, 84-92, 375 e.p., rec. 85%	.01½		.01⅝		.01½	

BURNING OIL

	May 19		May 12		May 5	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.02⅝	.02½	.02¾	.02½	.02½	.02⅝
42-44 water white kerosene	.02½	.02¾	.02½	.02¾	.02⅝	.03
NORTH TEXAS—						
41-43 water white kerosene	.02⅝	.02½	.02⅝	.02½	.02⅝	.02½
40-41 water white kerosene	.02¼	.02⅝	.02¼	.02⅝	.02¼	.02½
***NORTH LOUISIANA—**						
41-43 water white kerosene	.02⅞	.03	.02⅞	.03	.03	
***ARKANSAS—**						
41-43 water white kerosene	.02⅞	.03	.02⅞	.03	.03	
PENNSYLVANIA—						
43 Kerosene prime white	.04	.04¼	.04	.04¼	.04⅜	
45 Kerosene water white	.04¼		.04¼	.04⅜	.04⅜	
46 Kerosene water white	.04½	.04¾	.04½	.04⅝	.04⅝	.04¾
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.04	.04½	.04	.04½	.04	.04½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.02⅜	.02½	.02⅜	.02½	.02½	.02¾
42-44 water white kerosene	.02½	.02¾	.02⅝	.02⅞	.02⅝	.03
GULF COAST (Export)—						
41-43 prime white	.04		.04		.04¼	
44 water white	.05		.05		.05¼	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	May 19		May 12		May 5	
OKLAHOMA (Group 3)—						
Below 18 gravity Fuel Oil, per bbl.	.30	.40	.30	.40	.35	.40
18-22 Fuel Oil, per bbl.	.35	.40	.35	.40	.37½	.42½
20-22 Fuel Oil, per bbl.	.37½	.42½	.37½	.42½	.40	.45
22-26 Fuel Oil, per bbl.	.42½	.47½	.42½	.47½	.45	.50
24-26 Fuel Oil, per bbl.	.45	.50	.45	.50	.47½	.50
26-30 Fuel Oil, per bbl.	.50	.55	.50	.55	.50	.55
28-30 Fuel Oil, per bbl.	.55	.60	.55	.60	.55	.65
32-36 Gas Oil (industrial)	.00⅞	.01⅛	.01	.01⅛	.01⅛	.01¼
32-36 Gas Oil (straw color, high cold test)	.00⅞	.01⅛	.01	.01¼	.01⅛	.01⅜
32-36 Gas Oil (straw color, low cold test)	.01¼	.01½	.01¼	.01½	.01½	.01⅝
36-38 Distillate	.01½	.01¾	.01⅝	.01¾	.02	.02¼
38-40 Straw Distillate	.01⅝	.02	.01¾	.02	.02⅛	.02¼

Note—Fuel oils over 40 cold test generally 5 to 10 cents per barrel less.

NORTH TEXAS—						
Below 20 gravity Fuel Oil, per bbl.	.25	.35	.25	.35	.25	.35
24-26 Fuel Oil, per bbl.	.35	.40	.35	.45	.35	.45
32-36 Gas Oil (industrial)	.00¾	.01⅛	.01	.01⅛	.01	.01¼
38-40 Straw Distillate	.01½	.01¾	.01⅝	.01¾	.01⅞	.02
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.55	.60	.55	.60	.55	.60
30-32 Gas Oil (low cold test)	.02⅛	.02¼	.02⅛	.02¼	.02¼	
***ARKANSAS—**						
33-36 Distillate	.02¼	.02½	.02¼	.02½	.02¼	
30-32 Gas Oil	.02	.02⅛	.02	.02⅛	.02⅛	.02¼
16-22 Refinery Fuel Oil, per bbl.	.50	.55	.50	.55	.55	
GULF COAST (South Texas)—						
Gas Oil	.02¾	.03	.03		.03	
Bunker C Fuel (cargo lots), per bbl.	.60	.62½	.60	.62½	.60	.62½
Bunker C Fuel (small lots)	.80		.80		.80	
PENNSYLVANIA—						
30-34 Fuel Oil	.02½		.02½	.02¾	.02¾	.02⅞
36-40 Fuel Oil	.02¾		.02¾	.03	.02⅞	.03
CALIFORNIA—						
42-45 480 endpoint engine distillate	.03	.04	.03	.04		
15-19 Fuel Oil, Bunker (at tidewater), bbl.	.60	.90	.60	.90	.60	.90
15-19 Fuel Oil (cargo lots, at tidewater), bbl.	.55	.85	.55	.85	.55	.85
†15-19 Fuel Oil, f.o.b. tank cars	.30	.70	.30	.70	.30	.70
27 plus Diesel, per bbl.	.70	.95	.70	.95	.70	.95
30-34 Gas Oil	.70	.95	.70	.95	.70	.95
CHICAGO DISTRICT (Based on Group 3)—						
18-22 Fuel Oil, per bbl.	.32½	.37½	.35	.40	.35	.40
22-26 Fuel Oil, per bbl.	.35	.40	.40	.45	.37½	.42½
28-30 Fuel Oil, per bbl. (zero)	.62½	.67½	.62½	.67½	.60	.70
32-36 Gas Oil (industrial)	.00⅞	.01⅛	.01	.01¼	.01¼	.01⅜
32-36 Gas Oil (zero)	.01⅜	.01⅝	.01⅜	.01⅝	.01½	.01¾
38-40 Straw Distillate	.01½	.01⅞	.01⅝	.02	.02⅛	.02¼

*Louisiana, Arkansas, Mississippi and East Texas delivery. †Lowest priced fuel oil has high sulphur content.

LUBRICATING OIL AND WAX

	May 19		May 12		May 5	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.05		.05		.05	
100 vis., 3 color, 20-25 cold test	.04¾	.05	.04¾	.05	.04¾	.05
150 vis., 3 color, 20-25 cold test	.07	.07½	.07	.07½	.07	
150 vis., 4 color, 20-25 cold test	.06	.06½	.06	.06½	.06½	
180 vis., 3 color, 23-28 cold test	.08	.08½	.08	.08½	.08½	
180 vis., 4 color, 23-28 cold test	.07½	.08½	.07½	.08½	.08	
180 vis., 5 color, 23-28 cold test	.07¼	.07½	.07¼	.07½	.07¼	.07½
200 vis., 3 color, 23-28 cold test	.09½	.10	.09½	.10	.09½	.10
200 vis., 4 color, 23-28 cold test	.09	.09½	.09	.09½	.09½	
200 vis., 5 color, 23-28 cold test	.08	.08½	.08	.08½	.08½	.09
240 vis., 3 color, 25-30 cold test	.11	.11½	.11	.11½	.13¼	.13½
240 vis., 4 color, 25-30 cold test	.10	.10½	.10	.10½	.12¼	.12½
240 vis., 5 color, 25-30 cold test	.09½	.10	.09½	.10	.11¼	.11½
280 vis., 3 color, 25-30 cold test	.12½	.13	.12½	.13	.15½	
280 vis., 4 color, 25-30 cold test	.11½	.12	.11½	.12	.14½	
280 vis., 5 color, 25-30 cold test	.11	.11½	.11	.11½	.13½	
Cylinder Stocks:						
600, steam refined, light green	.04½	.05½	.04½	.05½	.05	.06
600, steam refined, dark green	.03	.03½	.03	.03½	.03½	.04½
190-200 vis., D color, Bright Stocks	.18		.18		.20	
150-160 vis., D color, Bright Stocks 0-10 c.t.	.14½	.15	.14½	.15	.16	.17
150-160 vis., D color, Bright Stocks 10-25 c.t.	.14	.14½	.14	.14½	.15	.16
150-160 vis., D color, Bright Stocks 25-40 c.t.	.14		.14		.14½	.15½
150-160 vis., E color, Bright Stocks	.13½	.14	.13½	.14	.14	.15
Waxes:						
124-126 White Crude Scale Wax	.01¾	.02	.01¾	.02	.01¾	.02

All bright stock prices are for domestic movement.

PENNSYLVANIA—						
34 Neutral	.05½	.06	.05½	.06	.05½	.06
34 Sundebloom	.05¼		.05¼		.05¼	
36 Miners' Neutral	.05½		.05½		.05½	
150, 3 color	.16¼	.16½	.16½	.16¾	.16¾	.17
180, 3 color	.19	.19½	.18½	.19½	.18½	.19½
200, 3 color	.21½		.21½	.22	.21½	.22
220, 3 color	.24		.24	.26	.24	.26½
600, steam refined	.08		.08	.08½	.08¼	.08½
650, steam refined	.11½	.12¼	.11	.12	.11	.12
600, Pennsylvania Flash	.12	.13½	.11½	.12½	.12	.14
600, E filtered	.12	.12½	.11½	.12½	.11½	.12½
600, D filtered, Oil City	.15	.16	.15	.17	.15	.17
Pennsylvania Bright Stocks below 35 c.t.	.17½		.17½	.18	.18	
Pennsylvania Bright Stocks above 35 c.t.	.17	.17½	.17	.17½	.17½	.18
*122-124 White Crude Scale Wax	.02	.02⅛	.02	.02⅛	.02	.02⅛
124-126 White Crude Scale Wax	.02⅛		.02⅛		.02⅛	

*At New York.

GULF COAST (South Texas)—						
100 vis., 2-2½ color, pale oil	.05½	.06	.05½	.06	.06	.06¼
200 vis., 3 color, pale oil	.07¾	.08	.07¾	.08	.08¼	.08½
300 vis., 3 color, pale oil	.09	.09¼	.09	.09¼	.09½	.09¾
500 vis., 3½ color, pale oil	.10¼	.10½	.10¼	.10½	.10¾	.11
750 vis., 3½ color, pale oil	.11¾	.12	1.1¾	.12	.12¼	.12½
1,200 vis., 3½ color, pale oil	.14¼	.14½	.14¼	.14½	.14¾	.15
2,000 vis., 4 color, pale oil	.15¼	.15½	.15¼	.15½	.15¾	.16
200 vis., 5-6 color, red oil	.07	.07¼	.07	.07¼	.07½	.07¾
300 vis., 5-6 color, red oil	.08¼	.08½	.08¼	.08½	.08¾	.09
500 vis., 5-6 color, red oil	.09½	.09¾	.09½	.09¾	.10	.10¼
750 vis., 5-6 color, red oil	.10½	.11¼	.10½	.11¼	.11	.11¾
1,200 vis., 5-6 color, red oil	.13¼	.13½	.13¼	.13½	.13¾	.14
2,000 vis., 6 plus color	.15¼	.15½	.15¼	.15½	.15¾	.16

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

CALIFORNIA—						
130 vis., 2½-3 color	.09	.09½	.09	.09½	.09	.09½
200 vis., 2½-3 color	.10	.10⅜	.10	.10⅜	.10	.10⅜
300 vis., 3-3½ color	.10⅜	.11½	.10⅜	.11½	.10⅜	.11½
350 vis., 3½-4 color	.11½	.11⅜	.11½	.11⅜	.11½	.11⅜
400 vis., 3½-4 color	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
Red Neutral:						
200 vis., 4½-5 color	.09½	.10	.09½	.10	.09½	.10
300 vis., 5-6 color	.10¼	.10¾	.10¼	.10¾	.10¼	.10¾
400 vis., 5-6 color	.11	.12	.11	.12	.11	.12
500 vis., 4½-5 color	.12¼	.13	.12¼	.13	.12¼	.13
500 vis., 5-6½ color	.12	.12¾	.12	.12¾	.12	.12¾
600 vis., 6½ plus color	.13	.14	.13	.14	.13	.14

Note—Bright Stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	May 19		May 12		May 5	
Gasoline, U. S. Motor, 58-60, 437 e.p.	.05¾	.06½	.06	.06½	.06	.06½
Kerosene, water white, 41-43	.05¼	.05¾	.05¼	.05¾	.05¾	.06
*Fuel Oil, Bunker "C," 41-43	.95		.95		.95	
†Fuel Oil, Diesel, 28-30, per bbl.	1.65		.165		.165	
Gas Oil, 28 gravity plus	.04		.04		.04¼	.04¾
25 pale Paraffin Oil, tank car	.10¼		.10¼		.10¼	
28 pale Paraffin Oil, tank car	.07¼		.07¼		.07¼	
280 red Paraffin Oil, tank car	.12½		.12½		.12½	
250 red Paraffin Oil, tank car	.11½		.11½		.11½	
225 red Paraffin Oil, tank car	.10		.10		.10	
200 red Paraffin Oil, tank car	.09¼		.09¼		.09¼	
Domestic heating oil, min. 32 grav., tank car	.04		.04		.04	
Refined Wax:						
120-122 a.m.p., per lb.	.03		.03		.03	
125-127 a.m.p., per lb.	.03⅛		.03⅛		.03⅛	
130-132 a.m.p., per lb.	.03⅝		.03⅝		.03⅝	
133-135 a.m.p., per lb.	.04¼		.04¼		.04¼	
135-137 a.m.p., per lb.	.04⅝		.04⅝		.04⅝	
Petrolatum in barrels in carload lots, per pound:						
Dark Green	.01¾		.01¾		.01¾	
Amber	.03		.03		.03	
Extra Amber	.03¼		.03¼		.03¼	
Cream	.06		.06		.06	
Lily White	.06¾		.06¾		.06¾	
Snow White	.08		.08		.08	

*Lighterage 5 cents a barrel extra. †Lighterage 6.5 cents a barrel.

NEW YORK (BAYONNE) EXPORT PRICES

	May 19		May 12		May 5	
600, steam refined cylinder stocks, in bbls.	.16	.16¼	.16	.16¼	.16	.16¼
635, steam refined	.16½	.17	.16½	.17	.16½	.17
650, steam refined	.19	.20	.19	.20	.19½	.20
600, Pennsylvania Flash	.20	.21	.20	.21	.20	.21
630 Pennsylvania Flash	.25¾	.26	.25¾	.26	.26	
600, Warren E	.19½		.19½		.20	
600, Oil City E	.18½		.18½		.19	
Light 140-150 Bright Stocks	.25	.26	.25	.26	.25	.26
Dark 140-150 Bright Stocks	.24	.25	.24	.25	.23½	.24

LOS ANGELES EXPORT PRICES

	May 19		May 12		May 5	
Kerosene, water white	.04	.04½	.04	.04½	.04	.04½
*U. S. Motor Gasoline, 53-55, 437 e.p.	.03¼	.04	.03¼	.04½	.03½	.04½
*58-62, 400 endpoint gasoline	.03½	.04½	.04	.04½	.04	.04½

*For coastwise shipment.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Rusk County, Tex.* (Apr. 6, 1931) ....$ .25
East Texas (May 9, 1931)‡ ..... .40
Corsicana heavy (Apr. 23, 1931)† ..... .38
Other fields.....See gravity table

*Posted by Panola Pipe Line Co. For Humble Oil & Refining Co. and Magnolia Petroleum Co. posted prices on East Texas, see gravity table. †Magnolia Petroleum Co. ‡Tidal Refining Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties..See gravity table

WEST TEXAS

Iatan*.....Same as North Texas
Crane-Upton-Crockett, Howard and Glasscock and Ector (Apr. 21, 1931)†.$ .30
Winkler and Pecos, Tex. (Apr. 21, 1931)† .35
Lea County, N. Mex. (Apr. 21, 1931)... .325

*Includes Westbrook Field. †Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover (all grades) (Mar. 10, 1931) .$ .45
Carterville, Sarepta and Cotton Valley, below 36 gravity.....See gravity table
March 10, 1931 ..... .45
Urania (Oct. 30, 1930)..... .75
Calion, heavy (Mar. 10, 1931)..... .45
East El Dorado (Mar. 10, 1931)..... .45
Other fields.....See gravity table

Note—Smackover and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado posted by Gulf Refining Co. and Magnolia Petroleum Co.; Calion posted by Gulf Refining Co.

GULF COAST

Grade A (Apr. 21)*.....$ .70
Grade B, 25° and upward—See gravity table
Jennings, La. (Apr. 21, 1931)†..... .75
Refugio, light.....Same as Grade B
Refugio, heavy (Jan. 14)*..... .69
Markham (Mar. 10, 1931)‡..... .50
High Island (Apr. 21, 1931)†..... .65
Hankamer (Apr. 21, 1931)†..... .65

*Humble Oil & Refining Co. †Gulf Refining Co. of Louisiana. ‡Texas Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.

Iles (Mar. 7, 1931):
33 gravity and above.....$ .72
Under 33 gravity ..... .50
Fort Collins (Mar. 5, 1931)..... .58
Florence (Mar. 5, 1931)..... .47
Wellington (Mar. 5, 1931)..... .48
Dutton Creek (Oct. 28, 1930)..... 1.01
Rock Creek, Wyo. (Mar. 5, 1931)..... .66
Salt Creek.....See gravity table
Big Muddy (Mar. 5, 1931)..... .65
Grass Creek, heavy (July 27, 1928)..... .90
Grass Creek, light (Mar. 5, 1931)..... .90
Elk Basin (Mar. 5, 1931)..... .90
Lance Creek (Mar. 5, 1931)..... .98
Poison Spider (Mar. 5, 1931)..... .70
Notches (Mar. 14, 1927)..... .65
Hudson (Mar. 5, 1931)..... .35
Lander (Mar. 5, 1931)..... .40
Rex Lake (Feb. 22, 1930)..... 1.10
Osage (Apr. 15, 1931)..... .93
Lost Soldier (Mar. 5, 1931)..... .55
Hamilton Dome (Mar. 14, 1927)..... .85
Greybull (Oct. 28, 1930)..... 1.25
Torchlight (Oct. 28, 1930)..... 1.25
Cat Creek (Mar. 5, 1931)..... .90
Pondera, Mont. (Mar. 13, 1931)..... 1.00
Sunburst, Mont. (Mar. 12, 1931)..... 1.10
Hogback, N. Mex. (Mar. 5, 1931)..... 1.05
Artesia, N. Mex. (Mar. 10, 1931)..... .40
Lea County, N. Mex. (Apr. 21, 1931)... .325
Border, Mont. 1.55
Red Coulee, Alberta 1.55

Note—Salt Creek, Cat Creek, Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Ohio Oil Co. ceased posting Artesia on March 5, 1931. Lea County posted by Humble Oil & Refining Co. Fort Collins, Wellington, Orchard, Florence, Rattlesnake and Table Mesa by the Continental Oil Co. Osage posted by Arro Oil & Refining Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (Apr. 21, 1931)*.....$ .53
Luling (Apr. 23, 1931)†..... .38
Mirando (Apr. 21, 1931)*..... .60
Pettus (Apr. 21, 1931)*..... .75
Salt Flat (Apr. 21, 1931)*..... .53
Thrall‡..... ...
Lytton Springs (Lockhart).See gravity table
Dobrowolski (Oct. 25, 1930)‖.....
Same as Mid-Continent gravity scale up to and including 38-38.9° at..... 1.01
Somerset (Oct. 25, 1929)‖.....
Same as Mid-Continent gravity scale up to and including 38-38.9° at..... 1.01

*Posted by Humble Oil & Refining Co. †Magnolia Petroleum Co. ‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight. §Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products Co. ‖Pioneer Oil & Refining Co.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective April 23, 1931)
Penna Grade Oil in National Transit Lines (Pennsylvania) $1.75

(Continued on Page 146)

CRUDE OIL GRAVITY TABLE

	Oklahoma, Kansas, East Central Texas 1	Ranger, North Texas and Cooke County, Texas 2	East Texas 3	North Louisiana and Arkansas 4	Carson and Hutchinson Counties, Texas 5	Gray County, Texas 6	Grade B Gulf Coast and Refugio, Texas 7	Salt Creek, Wyoming 8	Stephens, Arkansas 9
Below 25	....	....	....	....	....	....	.60	....	....
25 to 25.9	....	....	....	....	....	....	.61	....	....
26 to 26.9	....	....	....	....	....	....	.63	....	....
27 to 27.9	....	....	....	....	....	....	.65	....	....
28 to 28.9	....	....	....	....	....	....	.67	....	....
Below 29	.43	.33	.43	.43	....	....	....	....	.54
29 to 29.9	.45	.35	.45	.45	....	....	.69	.45	.58
30 to 30.9	.47	.37	.47	.47	....	....	.71	.47	.62
31 to 31.9	.49	.39	.49	.49	....	....	.73	.49	.66
32 to 32.9	.51	.41	.51	.51	....	....	.75	.51	.70
33 to 33.9	.53	.43	.53	.53	....	....	.77	.53	....
34 to 34.9	.55	.45	.55	.55	.30	.33	.79	.55	....
35 to 35.9	.57	.47	.57	.57	.32	.35	.81	.57	....
36 to 36.9	.59	.49	.59	.59	.34	.37	....	.59	....
37 to 37.9	.61	.51	.61	.61	.36	.39	....	.61	....
38 to 38.9	.63	.53	.63	.63	.38	.41	....	....	....
39 to 39.9	.65	.55	.65	.65	.40	.43	....	....	....
40 and above	.67	.67	.67	.67	.42	.45	....	....	....

Column 1—Stanolind Crude Oil Purchasing Co. posted above prices on March 5, effective in Kansas, Oklahoma and East Central Texas, where it purchases oil. Magnolia Petroleum Co. posted same day but with these differences: Below 26 degrees, 40 cents; 26-26.9 degrees, 41 cents; 27-27.9 degrees, 42 cents; 28-28.9 degrees, 43 cents. Tidal Refining Co. and Tidal-Western Oil Corp. adopted new price schedule March 6. Mid-Continent Petroleum Corp., Continental Oil Co., H .F. Wilcox Oil & Gas Co., Eason Oil Co., Standard Oil Co. of Kansas, Sinclair Refining Co., White Eagle Oil Corp. and Producers Oil Co. met the price on March 6, Champlin Refining Co. on March 7, Carter Oil Co., The Texas Company, Humble Oil & Refining Co., Empire Pipe Line Co., Gypsy Oil Co. and Gulf Pipe Line Co. met Stanolind prices on March 10, Pure Oil Co. posted same schedule in Van, Texas, Pool, March 5.

Column 2—Posted by Humble Oil & Refining Co., April 21. Met by Stanolind Crude Oil Purchasing Co., Gulf Pipe Line Co., Tidal Western Oil Co., Continental Oil Co., April 21. By The Texas Company and Magnolia Petroleum Co., April 23. Effective May 9, 1931, in Wichita County only, the Tidal Western Oil Corp. posted a new price schedule as follows: Below 34 degrees, 33 cents; 34 degrees, 35 cents, with 2 cents added for each degree up to and including 40 degrees and above at 47 cents.

Column 3—Magnolia Petroleum Co., March 26, 1931; Humble Oil & Refining Co., April 21, 1931. Gulf Pipe Line Co., April 21, 1931. Sinclair Refining Co., May 12, 1931. The Texas Company, May 15, 1931. Arkansas Fuel Oil Co., May 18, 1931. Effective May 9, 1931, Tidal Refining Co. posted a flat price of 40 cents per barrel for East Texas crude oil.

Column 4—Standard Oil Co. of Louisiana and The Texas Company posted March 10. Standard prices apply to Caddo, Homer, Haynesville, Bull Bayou, Sabine, Crichton, De Soto, El Dorado, Cotton Valley, Sarepta and Carterville.

Column 5—Humble Oil & Refining Co., April 21. Other buyers met price effective April 21.

Column 6—Humble Oil & Refining Co., March 21. Other buyers met price effective April 21.

Column 7—Humble Oil & Refining Co., March 21. Gulf Pipe Line Co. met price effective April 21.

CALIFORNIA CRUDE OIL PRICES

(Posted by Union Oil Co. March 30 and the Standard Oil Co. of California March 31)

	Alamitos Hts., Signal Hill, Seal Beach, Torrance, Athens, Rosecrans, Dominguez, Santa Fe Springs, Montebello, Huntington Beach, East Coyote, Richfield, Brea-Olinda	Santa Paula	Orcutt	Coalinga, McKittrick, Kern River, Midway-Sunset, Elk Hills, Buena Vista Hills, Lost Hills
11 to 13.9	....	....	....	$.50
14 to 14.9	$.65	$.60	$.55	.55
15 to 15.9	.65	.60	.55	.55
16 to 16.9	.65	.60	.55	.55
17 to 17.9	.65	.60	.55	.55
18 to 18.9	.65	.60	.55	.55
19 to 19.9	.65	.60	.55	.55
20 to 20.9	.65	.58	.53	.53
21 to 21.9	.62	.56	.51	.51
22 to 22.9	.59	.53	.49	.49
23 to 23.9	.56	.50	.47	.47
24 to 24.9	.53	.47	.46	.46
25 to 25.9	.50	.44	.43	.43
26 to 26.9	.47	.41	.41	.41
27 to 27.9	.44	.38	.39	.39
28 to 28.9	.41	.35	.37	.37
29 to 29.9	.38	....	.35	.35
30 to 30.9	.35	....	....	....

For the time being the Union Oil Co. and the Standard Oil Co. will not post a schedule of crude oil prices for the Playa del Ray and Kettleman Hills Fields.

TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns May 19

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago	14.0	14 0	3 0	9.0
Decatur, Ill.	14 4	14.4	3 0	9 0
E. St. Louis	13.7	13 7	3.0	8.2
Joliet	14 4	14.4	3.0	9 0
Peoria	14 4	14.4	3.0	9.0
Quincy	14.2	14.2	3.0	8.8
Davenport, Ia.	14 5	14 5	3.0	9 3
Des Moines	14 5	14.5	3 0	9 2
Keokuk	14.5	14.5	3.0	9 3
Sioux City	14.1	14.1	3 0	8 9
Duluth, Minn.	15.5	15.5	3.0	9 9
Mankato	15.1	15.1	3.0	9.7
Minneapolis	15.2	15.2	3.0	9 9
La Crosse, Wis.	16 2	16 2	4 0	10.0
Milwaukee	15.1	15.1	4 0	8 9
Madison	15.3	15 3	4 0	9 1
Detroit, Mich.	14.8	14.8	3.0	10.7
Grand Rapids	14 7	14 7	3 0	10.6
Saginaw	14.9	14 9	3 0	10 8
Evansville, Ind.	15.1	15.1	4.0	9 9
Indianapolis	15.3	15.3	4.0	10.1
South Bend	15.4	15.4	4 0	10.2
Fargo, N. D.	16 9	16 9	3 0	11.0
Huron, S. D.	16.3	16 3	4 0	10.7
Sioux Falls	15 8	15 8	4.0	10.4
K. C., Mo.	13.9	13.9	3 0	7.6
Springfield*	13 9	13.9	3.0	8 5
St. Louis*	12 9	12.9	2 5	8 3
St. Joseph	13 5	13 5	3.0	7.5
Wichita, Kans.	12.8	12 8	3 0	7.8
Bartlesville, Ok.	13.0	16 0	5.0	7.5

*State tax 2 cents, remainder city tax.

A third grade of gasoline, "Stanolind Blue," is sold at all major points at a price 2 cents or more below the price on the regular grade.

Effective April 15—Discounts on Q.D.A. on 1,000 gallons or more per month throughout territory: Red Crown Ethyl gasoline, 2 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 1 cent off tank wagon price.

Discount in Chicago division on 1,000 gallons or more per month: Red Crown Ethyl gasoline, 4 cents off tank wagon price; Red Crown gasoline, 3½ cents off tank wagon price; Stanolind Blue gasoline, 2 cents off tank wagon price.

Discounts on resellers authorized agent's agreement: Same amounts as above except made off service station price instead of tank wagon price.

PACIFIC COAST TERRITORY

	Gasoline			Kero.
	Wh'ls'e price	Retail* price	Incl'ds tax of	tank wagon
Fresno	12.0	11.0	3.0	17.0
San Francisco	12 0	11 0	3.0	15.5
Los Angeles	11 5	10.5	3.0	15.5
Reno, Nev.	20 0	20 0	4.0	19.0
Portland, Ore.	13.5	12 5	4 0	16 5
Seattle, Wash.	14 0	13 0	5 0	16.5
Tacoma	14 0	13.0	5.0	16.5
Spokane	20 0	19 0	5 0	20.5
Phoenix, Ariz.	18.5	18.0	5.0	20 0

Above prices are at company's plant or depots as company does not operate stations. A 6-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 3 cents plus a 3-cent special temporary discount subject to withdrawal at any time.

*Retail prices posted by Standard Stations, Inc., a subsidiary.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	13.0	16.0	4 0	10.0
Fort Worth	13.0	14 0	4.0	10.0
Houston	14 0	18.0	4.0	11.0
San Antonio	14.0	18 0	4.0	10.0
El Paso	14.0	18 0	4.0	12.0
Texarkana	16.0	16.0	4 0	11.0
Muskogee, Ok.	13.0	16.0	5.0	8 0
Okla. City	10.0	11.0	5.0	8.0
Tulsa	10.0	11.0	5.0	8.0
Ft. Smith, Ark.	15.5	16.5	5.0	11.0
Little Rock	16.5	17.5	6.0	11.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	16.6	17.6	2.0	15.6
New York*	15.3	15.3	2.0	14.3
Buffalo	15 8	15 8	2.0	14.8
Rochester	16.0	16.0	2.0	14.0
Syracuse	16.8	16.8	2.0	14.8
Boston, Mass.	16.5	16 5	3.0	13.5
Augusta, Me.	15.8	15.8	4.0	14.8
Manch'tr, N. H.	18 4	18.4	4.0	14.0
Burlington, Vt.	19.3	19.3	4.0	15.3

*Prices in steel barrels.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	18.0	16.0	6 0	12 5
Augusta	18 0	20 0	6 0	14.0
Macon	18 0	18 0	6 0	13 0
Savannah	18.0	18 0	6 0	12 0
Birm'ham, Ala.	17 0	19.0	5.0	13.0
Mobile	17 0	19.0	4.0	13 0
Montgomery	17 0	17 0	4 0	13 5
Clarks'le, Miss.	18.0	20 0	5 0	13 5
Jackson	15.0	13.0	5.0	11.0
Natchez	18.0	20.0	5 0	13 5
Gulfport	16 0	16 0	5 0	13 5
Vicksburg	16 0	18.0	5.0	11.0
Jack'ville, Fla.	15 0	17.0	6 0	12 0
Miami	18.0	20 0	6 0	13 0
Pensacola	16 0	18 0	6.0	13.0
Tampa	17.0	17.0	5.0	12 0
Lexington, Ky.	17 0	18 0	5 0	12.0
Covington	16.0	17 0	5.0	11.0
Louisville	16 0	17 0	5 0	11 0
Ashland	17 0	19.0	5.0	13.0
Paducah	17 0	18.0	5.0	11.0
Bowling green	19 0	21.0	5.0	14.5
Corbin	18.0	19 0	5.0	15 0

A third grade, "Kyso Green," is sold at a price generally 2 cents below the price on the regular grade.

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery, Birmingham and Mobile state taxes add 1-cent levy tax. To Gulfport state tax add privilege tax of 2 cents.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.	15.5	16 5	6.0	12.0
Baton Rouge	15.5	16 5	5.0	12.0
Alexandria†	16.5	17.5	6.0	12.0
Lafayette*	16.5	17 5	6 0	12.0
Lake Charles*	16.5	17.5	6.0	12.0
Shreveport	15.5	16.5	5.0	12.0
Knoxville, Tenn.	18.0	19.0	5.0	13.5
Memphis	13.0	14 0	5.0	10.0
Chattanooga	17.5	18.5	5.0	13.0
Nashville	17.0	18.0	5.0	13.5
Bristol	18.5	19 5	5.0	14.0
Lt. Rock, Ark.	16.5	17.5	6.0	11.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Gasoline price at Alexandria includes 1-cent tax in parish of Rapides.

Two-cent discount off gasoline tank wagon price to dealers and commercial accounts.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	12.9	12.9	4.0	9.25
McCook	16.00	17.75	4.0	10 75
Norfolk	15.75	16.75	4.0	9.75
N. Platte	16.75	17.75	4.0	10.50
Scottsbluff	16.00	16.00	4.0	10.25

Note—Dealers' discounts allowed as follows: Red Crown Ethyl, 3 cents off station price; Red Crown, 2½ cents off station price; third grade, 1 cent off station price.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points*	15.0	16.0	4.0	†13.0

*Dealers and commercial accounts 2 cents under tank wagon.

†Service station price 14 cents.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	12 0	8 0
V.M.&P. naphtha	14.0	9.5
Cleaners' naphtha	16.2	11.0
Stanisol	16.2	11.0

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

All dumps of 50 gallons or more..... .07

Note—Outside Chicago furnace oils discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	*12 0	*14 0	...	12.0
Philadelphia	*12.0	*14 0	...	12.0
Scranton	*12 0	*14 0	...	12 0
Allentown	*12.0	*14 0	...	12 0
Altoona	*12 0	*14 0	...	12.0
Erie	*12 0	*14.0	...	12 0
Dover, Del.	15.0	17 0	3.0	12 0
Wilmington	15.0	17 0	3.0	12 0
Springf'd, Mass.	14.5	16 5	2 0	11 0
Fall River	14 1	16.1	..	11 0
Worcester	14 3	16.3	2 0	11.0
Boston	13 5	15.5	2 0	11 0
Providence, R.I.	13 7	15 7	2.0	11 0
Hartford, Conn.	14.5	16.5	2 0	10.0
New Haven	14.6	16 6	2 0	10 0

*Does not include tax of 2 cents in Pennsylvania. Pennsylvania tax is collected by the dealer and paid by him direct to the State. Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purpose of resale. Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atl'tic City, N.J.	13 7	15 7	3.0	11 5
Newark	12.7	14 7	3.0	10.5
Annapolis, Md.	15 2	16 2	4.0	11 0
Baltimore	14 4	15 4	4.0	9 5
Cumberland	16 2	17 2	4.0	12 0
Wash'gton, D.C.	12 9	13.9	2.0	10.0
Danville, Va.	17.0	18 0	5 0	11.8
Norfolk	15 5	16.5	5.0	10 0
Petersburg	16 5	17 5	5.0	11.3
Richmond	15.9	16 9	5 0	10.7
Roanoke	17 2	18.2	5 0	12 0
Charles'n, W.Va.	15.7	16 7	4.0	11.5
Keyser	16 3	17.3	4 0	12.1
Parkersburg	14 4	15.4	4 0	10.2
Wheeling	15 6	16 6	4 0	11.4
Charlotte, N. C.	18.5	19 5	6.0	11 0
Hickory	18 8	19 8	6 0	12 6
Mt. Airy	18 7	19.7	6.0	12.5
Raleigh	18 4	19.4	6 0	12.2
Salisbury	18.7	19 7	6.0	12.5
Charleston, S.C.	16 5	17.5	6.0	10 2
Columbia	18.4	19.4	6 0	12.2

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers, except in Washington, D. C., and in Maryland where discount is 3 cents.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	15.0	18 0	4.0	12 5
Pueblo	14 0	17.0	4 0	12.0
Grand Junction	16 0	19 0	4.0	14.5
Casper, Wyo.	15 0	18.0	4 0	10.0
Cheyenne	16 0	19 0	4.0	11.5
Butte, Mont.	17.0	20 0	5.0	16.0
Billings	20 0	23.0	5.0	14.5
Great Falls	20 0	23 0	5 0	16.0
Helena	20 0	23.0	5 0	16.0
S'lt Lake, Utah	17.5	20 5	4 0	16.0
Albu'que, N. M.	16.0	20.0	5.0	14.0
Boise, Idaho	18 0	21.0	5 0	13.0
Twin Falls†	20.5	....	5.0	13.0

‡Less 3½ cents.

TANK WAGON CHANGES

Standard Oil Co. of California reduced the gasoline wholesale price 2 cents in Fresno and 1 cent in Spokane, Wash., May 11. On May 13 the wholesale price was reduced 1 cent in Portland, Ore.

Standard Stations, Inc., reduced the gasoline retail price 1 cent in Spokane, Wash., and 2 cents in Phoenix, Ariz., May 11. On May 13 the retail price was reduced 1 cent in Portland, Ore.

Magnolia Petroleum Co. reduced the gasoline tank wagon and station prices 2 cents in Dallas, Tex., to 13 and 16 cents May 5. On the same date the station price was reduced 1 cent in Oklahoma City, Okla., and on May 4 the station price was reduced 1 cent to 11 cents in Tulsa.

Standard Oil Co. of Louisiana reduced the gasoline tank wagon and station prices 2 cents May 9 in Memphis, Tenn., to 13 and 14 cents.

Continental Oil Co. advanced the gasoline tank wagon and station prices one-half cent in Utah to equalize the increase in the state tax to 4 cents on May 12.

Continental Oil Co. reduced the gasoline tank wagon price at Boise, Idaho, to 18 cents and discontinued the 2-cent discount. The station price was posted at 21 cents at the same time. These changes were made May 15.

Magnolia Petroleum Co. reduced the gasoline tank wagon to 10 cents in Tulsa and Oklahoma City May 15.

CRUDE OIL PRICE CHANGES

Effective May 15 The Texas Company posted prices in East Texas ranging from 43 to 67 cents per barrel, thus meeting the Magnolia Petroleum Co.'s posted prices of March 26. On May 18 the Arkansas Fuel Oil Co. did likewise.

GAS AND PIPE LINE TAX BILLS IN ILLINOIS

SPRINGFIELD, Ill., May 16.—Bills have been introduced in the house proposing a tax on natural gas carried through pipe lines and for the licensing of pipe lines. They were introduced by Representative J. E. McMackin of Salem, and have been referred to the committee on public utilities and transportation.

The pipe line bill provides for the licensing of all pipe lines within or through the State for carrying gas, gasoline, oils or motor fuels. Approval of the Illinois Commerce Commission would be required, and each company would be obliged to pay a fee of $1 a mile for each inch of diameter of all lines constructed within the State, and annually thereafter a fee of 50 cents a mile for each inch of diameter. Such companies would be authorized to condemn property for a right of way not exceeding 75 feet in width, as approved by the commission.

The other bill would impose a license fee of 5 cents per 1,000 feet upon all natural gas, carried through pipe lines and used or otherwise disposed of in the State for any purpose. The measure provides that before any distributor may engage in business he shall file a surety bond of $5,000 to insure payment of fees due.

CRUDE OIL PRICES

(Continued from Page 145)

Penna Grade Oil in Southwest Pennsylvania Lines (Pennsylvania)	1.70
Pennsylvania Grade Oil in Southwest Pennsylvania Lines (Apr. 27, 1931)	1.60
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia)	1.50
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio) (Sept. 14, 1930)	1.25
Corning Grade Oil in Buckeye Pipe Line Co.'s Line (Mar. 11, 1931)	.80
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky)	1.10
Wayne District Oil in Cumberland Pipe Lines	1.17

Tide Water Pipe Co.

Bradford district (Apr. 22, 1931)	$2.00
Allegany district (Apr. 22, 1931)	2.00

Pure Oil Co.

Cabin Creek, W. Va. (Apr. 22, 1931)	$1.50
Kelly Creek, W. Va. (Apr. 22, 1931)	1.50
Bradford Hollow, W. Va. (Apr. 22, 1931)	1.50

MIDDLE WESTERN STATES

Ohio Oil Co.

(Effective March 6, 1931)

Lima	$ .90
Wooster	.99
Illinois	.80
Indiana	.50
Princeton	.80
Plymouth	shut in
Western Kentucky	.75
Midland, Mich.* (Mar. 13, 1931)	.75
Dundee, Mich. (Oct. 26)†	
.....Same as Mid-Continent gravity scale	
Upper and Lower Traverse Sands, Mich. (Oct. 28, 1930)†	
.....Same as Mid-Continent gravity scale	
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (Oct. 28)‡	.85
Oil City, Ky. (Apr. 1, 1931)§	.60
Oil Springs (Canada) (Oct. 28)¶	1.57
Petrolia (Canada) (Oct. 28)¶	1.50
Alberta (Canada)‖:	
50° and above (Mar. 1, 1931)	2.36
45 to 45.9° (Mar. 1, 1931)	1.87

*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment. ‡Posted by Paragon Development Co. §Posted by Stoll Refining Co. ¶Posted by Imperial Oil, Ltd. ‖Posted by Imperial Oil, Ltd., and Regal Oil & Refining Co. of Calgary.

MEXICAN CRUDE

Panuco*	$ .46

*F.o.b. ship, based on April transactions and exclusive of taxes and bar dues.

Of Interest to Sales Departments

Use of Bunker Oil To Manufacture Gas Increasing Rapidly

The use of bunker oil on the Atlantic Seaboard in the manufacture of artificial gas with the water gas machines is increasing rapidly, one concern having used over 1,000,000 bbls. during the past year according to W. J. Harvey of the Pacific Service Electric & Gas Co., Paterson, N. J. In a paper presented at the Joint Production and Chemical Conference of the American Gas Association held in Philadelphia, Pa., this week, Mr. Harvey explained that the use of bunker oil was the result of 10 years of experimentation.

According to Mr. Harvey, a large part of the bunker oil offered for sale in the vicinity of New York is of a type suitable for carburetting. The grade generally used has less than 12 per cent coke, 2½ per cent sulphur and viscosities of 300 seconds or less. The method generally used is the checkerless carbureter with atomizing spray with some of the oil vaporized directly on the fuel bed.

The following table gives the comparative results obtained with bunker oil and gas oil which the former is replacing:

	Gas oil	Bunker C oil
Baume of oil	24.0	15.3
Coke used	(*)	(*)
Generator fuel, lbs./M.	26.2	15.8
Oil, gals/M	2.90	4.18
Steam to sets, lbs./M	38.0	36.3
B.t.u. of gas	535	535
Gravity of gas	.62	.68
H_2S crude gas, gr./100 cu. ft.	120	260
Residuals: Gals.		
Tar/M	.72	.92
Tar, gals. oil	.25	.23
Drip oil/M	.06	.08
Drip oil/gals. oil	.02	.019
Make per set day, M. cu. ft.	4,500	5,700

*By-products.

Used as Road Oil

Progress is being made according to Mr. Harvey in the disposal of the tar bottoms from the bunker oil operation as road building material. In regard to residuals, Mr. Harvey said:

"In general it may be said that as a proportion by volume of the oil used the volumes of light oils and tar recovered are approximately the same for bunker oil as for gas oil; that the characteristics of the tars are radically different, and that the higher the carbon content of the oil the higher will be the carbon content and viscosity of the tar for a given method of operation. Since, however, the method of operation has a distinct bearing on tar characteristics, there are occasionally apparent contradictions in this respect."

MAY EVADE NEBRASKA TAX BY TECHNICALITY

An irregularity has been found in the gasoline tax laws of the State of Nebraska which may enable farmers to purchase gasoline in tank car lots and have it shipped into the State without paying the tax. The opinion this may be done is based on a technicality found in a law which dates back to pre-prohibition days when state option prevailed. The importation law was tested and the Supreme Court of the United States ruled that importations could be made free of state taxes if the commodity was contained in the original package. It is the opinion that farmers will attempt to evade tax payments by pooling their purchases and will seek the relief promised by construing the opinion in its liber terms. A bill has been introduced in the Nebraska legislature to prohibit this practice but this cannot be made an operative law until August.

IN CHARGE OF SALES

J. E. Skehan

Elected vice president in charge of sales of Standard Oil Co. of Louisiana. Mr. Skehan has been in charge of Newark sales division of the Standard Oil Co. of New Jersey.

EXPAND AVIATION DIVISION

NEW YORK, May 16.—Vacuum Oil Co. is expanding the operations of its aviation division, now under the direction of Harley W. Lake, former western manager of the commercial car division of the company. Mr. Lake is a veteran airman, having learned to fly in 1910 at the Bleriot school in France. Entering the British army in 1914 as a pilot, he was later transferred to the A.E.F. with the rank of captain. He is now a lieutenant colonel, United States Air Reserve. E. J. Snow, former head of the commercial car division for Vacuum, is in charge of aviation sales promotion.

CROWN CENTRAL STARTS MARKETING AT HOUSTON

HOUSTON, Tex., May 16.—Distribution of products of the Crown Central Petroleum Corp. in Houston and this district was started the past week following the appointment of Consolidated Oil Co. as exclusive distributor. The latter company previously represented the Sinclair Refining Co., marketing in this territory. The company is headed by J. B. Russ, president.

Until now Crown Central Petroleum Corp. has had no tank wagon nor retail distribution of its products in this area, with virtually all its business being moved through jobbing trade. Several months ago, with acquisition of the control by the Blaustein interests of Baltimore, large marketers on the East Coast, the company was given its first tank wagon and retail outlet.

With this expansion of market outlet, the company has plans for extensive enlargement of its refinery on the ship channel, east of Houston. Definite plans have not been made known but include the addition of considerable new equipment.

CODE STILL IN EFFECT

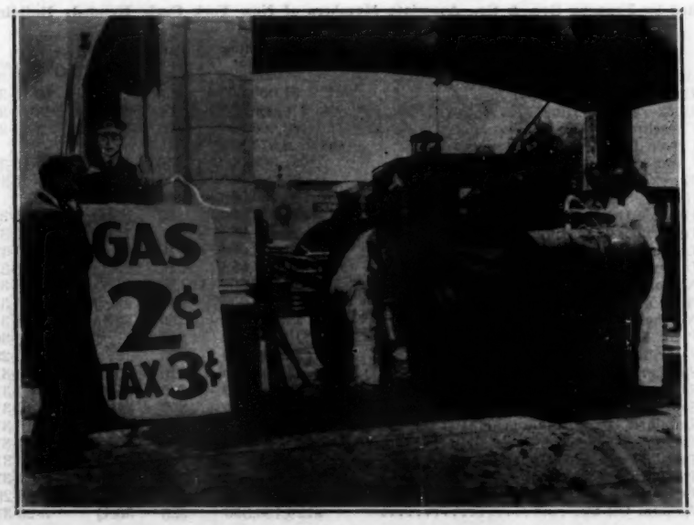
State code committee chairmen have been advised by Paul E. Hadlick, secretary of the American Petroleum Institute's Division of Marketing, that they should continue the administrative and educational work with National Code of Practices for Marketing Refined Petroleum Products. Every committee, he suggested, should meet at least once a month, keep minutes of the sessions and furnish the New York office with a copy.

"Strong adherence to the code, quick and able handling of complaints, and continued explanation of the code to all in the industry," Secretary Hadlick wrote, "will do much to lighten the burden of the marketing branch of the oil industry in these times."

PROPOSE 8-CENT TAX

A bill has been introduced by Florida State Senate proposing an increase in the state tax from 6 to 8 cents.

WHEN GASOLINE SELLS FOR 5 CENTS



Motorist plays safe and fills 50-gallon drum when Hollywood, Calif., dealer lowered price including tax to 5 cents. Dealer is said to have sold 50,000 gallons in two days.

Both Exports and Imports Decrease In First Quarter

WASHINGTON, D. C., May 18.—Both exports and imports of petroleum and refined products were decreased during the month of March and for the three months ending March, 1931, compared with the same periods of the previous year, according to monthly summary of the Department of Commerce.

Last year exports of petroleum and refined products in March were valued at $45,621,591 compared with $22,262,105 in March of this year. During the three months ending March, 1930, these exports were valued at $133,456,601 compared with $75,973,510 during the first three months of the present year.

This decrease in exports was largely in the form of refined oils, the value of such oil exports in March, 1930, being $4,926,949 for 11,321,900 bbls. compared with $18,958,111 for 6,513,269 bbls. in March, 1931. The decrease in the exportation of gasoline, naphtha and other finished light products was from 5,789,336 bbls. valued at $24,378,497 compared with 2,840,809 bbls. valued at $8,425,990 in March of the present year.

Petroleum and products imported in March, 1930, were valued at $11,707,438, dropping to $10,094,236 in March of this year. For the three months ending March, 1930, these imports were valued at $33,222,272, dropping to $28,603,786 during the first three months of the present year.

During March, 1930, crude petroleum imported amounted to 4,827,300 bbls. valued at $5,015,615, dropping to 3,714,711 bbls. valued at $3,898,503 in March of the present year. During the three months ending March these imports decreased from 14,597,815 bbls. in 1930 to 12,856,332 bbls. in the same period of the present year.

Of the crude petroleum imported in March 1,709,995 bbls. came from Venezuela and 1,367,000 bbls. came from Colombia, the amount imported in each instance being less than the amount imported in March, 1930.

Advanced and refined oils imported increased from 3,705,031 bbls. valued at $6,583,912 in March, 1930, to 4,061,131 bbls. valued at $6,143,270 in March, 1931. For the three months ending March 1930, these imports aggregated 10,719,461 bbls. valued at $17,332,079 compared with 10,560,120 bbls. valued at $15,097,976 for the three months ending March, 1931, showing a substantial decrease in price.

Gasoline, naphtha and other finished light products imported in March, 1930, amounted to 1,368,658 bbls. valued at $4,803,189 compared with 1,607,487 bbls. valued at $4,457,292. For the three months ending March, 1930, these importations aggregated 3,400,421 bbls. valued at $12,003,533 compared with 3,671,128 bbls. valued at $10,303,430. It will be seen that the larger quantity imported in the three months of 1931 was at a much less price than the gasoline imported in the first three months of 1930.—C. E. K.

VISCOSITY STANDARDS REPORT

Publication of a new report on co-operative testing of standard oils for viscosity by the Saybolt Universal viscometer during 1929 and 1930 has been announced by the American Petroleum Institute. It is contained in a 15-page booklet which presents results of continuation of work begun in 1922 and brings up to date the report of the institute's Division of Refining committee on viscosity standards published in 1926.

New Jersey Standard's Earnings Off

Net in 1930 Equal to $1.65 a Share, Compared with $4.75 in 1929. Russian and Rumanian Competition Factors in Foreign Operations

By A. E. Mockler
New York Bureau, The Oil and Gas Journal

NEW YORK, May 18.—Standard Oil Co. (New Jersey) reports for 1930 net income, including percentage of earnings of affiliated companies and after all charges and reserves, of $42,150,663, or 3.55 per cent on the net assets of $1,187,214,475. This was equal to $1.65 per share on the 25,518,468 shares of capital stock outstanding as of December 31, 1930. In 1929, the company reported net of $120,912,794, or $4.75 per share, on the 25,418,968 shares outstanding at the close of that year.

Payment of $50,929,686 in dividends during 1930 resulted in a deficit of $8,779,023, after utilizing the entire net profits of $42,150,663. In 1929, more than $84,000,000 was added to surplus after the payment of dividends totaling $46,519,705. Notwithstanding the fact that 1930 net did not entirely cover dividend requirements on the outstanding capital stock, however, a slight gain was reported in the Jersey company's total surplus, which totaled $549,252,775 as of December 31, last, against $549,223,220 at the close of the previous year, this resulting from a credit adjustment made to surplus of $8,808,579 during the year. In 1929, a debit adjustment of $3,213,324 was made on surplus.

Outstanding features of the Jersey company's report included an increase in cash from $27,615,991 at the end of 1929 to $46,657,382 as of December 31, 1930; a reduction in the oil inventories totaling $31,780,247, of which approximately $31,500,000 (or $1.23 a share on the capital stock) resulted from the drop in the prices for crude oil and refined products; a drop of approximately $34,000,000 in marketable securities held by the company; a decrease of over $50,000,000 in current assets (due largely to inventory write-off); announcement of favorable progress with the company's development of hydrogenation; important extensions and improvements to the company's natural gas properties and operations; and an increase of $133,971,247 in fixed capital assets, representing net additional investments in plants, properties and equipment.

Comparative Figures

The consolidated income account of Standard Oil Co. (New Jersey) and affiliated companies for 1930, with comparison with the preceding year's figures, follow:

	1930	1929
Gross op. inc.	$1,381,879,279	$1,525,386,465
Operating costs..	1,231,757,248	1,278,565,858
Taxes	29,453,536	37,055,419
Depr., depl., etc..	88,201,403	79,543,059
Net operat. inc..	36,447,093	127,922,128
Nonop. income...	29,394,724	26,075,571
Inc. before int...	65,841,818	153,997,700
Int., dis., etc....	8,903,147	9,087,551
Profit	56,938,671	144,910,149
Minority profit..	14,788,088	23,997,355
Net prof. to cp...	42,150,663	120,912,794

The 1930 balance sheet compares with that of 1929 as follows:

Assets—	1930	1929
Cash	$46,657,382	$27,615,991
Marketable sec..	179,168,908	214,370,499
Ac. and notes rec.	8,627,910	5,062,420
Oil inventories..	233,845,360	269,236,672
Other mdse.	10,369,527	10,156,936
Mat. and supplies	38,514,687	35,116,164
Accts. receivable.	213,802,918	221,629,527
Current assets...	730,986,692	783,188,259
Inv. n-cons. con..	162,798,808	185,123,981
Misc. securities..	4,795,413	1,880,481
Sink. and tr. funds	1,316,848	1,094,058
Prop., plant, eq...	1,459,021,391	1,327,879,149
Patents, etc.	47,322,176	44,493,170
Less reserves....	654,530,905	595,782,902
Prep. & def. chgs.	19,273,381	19,501,359
Total assets...	$1,770,993,803	$1,767,377,555
Liabilities—		
Acc. and notes pay.	$6,453,604	$9,130,341
Accts. payable...	144,782,166	129,154,735
Res. for inc. tax.	6,902,731	19,873,088
Other. acct. liab..	10,955,393	11,952,297
Current liab.....	169,093,894	170,109,461
F'd and l'g-t. debt	169,014,083	170,132,833
Def. credits.....	4,733,560	9,315,726
Annuities	53,825,598	47,774,820
Ins. and misc....	23,560,995	21,685,873
Cap. and spl. of min.	163,551,193	163,661,320
Cap. stock*.....	637,961,700	635,474,200
Surplus adjust.†.	8,808,579	3,213,324
Net profit.....	42,150,663	120,912,794
Dividends	50,929,686	46,519,705
Surplus	549,252,775	549,223,220
Total liabilities.	$1,770,993,803	$1,767,377,555

*25,518,468 shares outstanding on December 31, 1930, and 25,418,968 shares on December 31, 1929. †Credit in 1930, debit in 1929.

Statement by President Teagle

Commenting on the report and the company's position, W. C. Teagle, president, declared that in the income account there was charged against earnings for depreciation, depletion, amortization and abandonments $84,221,403, whereas the net increase in the reserves for the year was $58,738,003, a difference of $25,483,399. This difference, he said, was accounted for by cancellation of oil and gas leases, plant retirements and adjustments in connection with federal income taxes in prior years.

The company has under consideration a plan for modification of annuities and benefits to reduce annuities costs, Mr. Teagle said. Approval will be asked at the annual meeting next month for a fourth stock acquisition plan for employes, the third having expired at the end of 1930. Notwithstanding conditions forcing a greater number of layoffs, approximately 60 per cent of the stock allotted under the first and second plans was still held by employes, the report disclosed.

"The year under review saw an intensive study as to possible economies in all of the company's functions and operations," Mr. Teagle said. "In the face of world-wide contraction, the necessity for readjustment in the operating programs of subsidiaries was apparent to all. It was unavoidable that forces be reduced and that curtailment should be made in the controllable costs of administration and operation. Every effort was made to accomplish the maximum reductions with a minimum of disturbance of continuity of work and earnings. This program was carried out with practically no change in the labor policies as followed for many years."

Moratorium on Service Stations

Commenting on domestic market conditions, Mr. Teagle emphasized the uneconomic aspects of continued overproduction of crude, the overdevelopment of marketing facilities, and the failure of the industry as a whole to base its output on consumption requirements, and advocated "a moratorium on the building of more service stations and the closing of those which cannot be operated economically."

"Very considerable advantages would have accrued to the petroleum industry generally from the program of curtailment," he said, "but for the fact that, although it entered the year with excessive stocks of gasoline, refiners as a whole failed to scale down operations to a point at which the finished stocks could be profitably marketed. The inevitable occurred. Gasoline produced from the surplus crude run depressed the whole gasoline price structure, which in time reacted upon the posted price of crude oil.

"This outcome was more significant in view of the fact that domestic consumption of gasoline in 1930 established a new high level, being 18,000,000 bbls. in excess of the consumption in 1929. Had this gasoline gone into consumption at a fair price, based on the average cost of production, manufacture and distribution, the industry could have experienced a profitable year, even though its other products declined both in volume and in market value.

"The average wholesale price of gasoline in the Mid-Continent during 1930 was 5.72 cents a gallon, as against 7.21 cents a gallon in the preceding year, a reduction of 20 per cent. On the other hand, the average price of all grades of domestic crude throughout the year was but 7 cents a barrel below the average price of $1.27 which prevailed in 1929, a decrease of but 5½ per cent. Thus the average price of crude failed to reflect its real value as expressed by the gasoline markets.

"Efforts were made by state and federal officials to stabilize the situation. A committee on economics appointed by the Federal Oil Conservation Board reported that the market demand for the last nine months of the year could be supplied from a daily average production of 2,495,000 bbls. Production did not exceed this figure. The board's suggestion that refiners should reduce their runs by approximately one day's output a week was not, however, generally followed. The effect was a surplus of gasoline."

Crude Operations

The company increased gross production of crude in 1930 by 606,743 bbls. to 102,518,482 bbls.

"The increase was negligible," said the report, "because of the company's cooperation with the various states and federal conservation agencies. It surrendered many leases, and the curtailment in its drilling operations is evidenced by the fact that domestic subsid-

(Continued on Page 152)

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.
(Complete record week ending May 9)

1931 High	1931 Low	Week ending May 9 Sales	Week ending May 9 High	Week ending May 9 Low	Close May 12	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1	⅛	No sales ..	..	..	..	Atlantic Lobos		499,448	N.P.	....	5-28-30	..	..	..	..	1	⅛
12⅞	6¼	100	6¼	6¼	..	Borne Scrymser		$1,000,000	$25	....	10-15-30	56½	44½	46½	25	25	11¼
51	40	No sales ..	..	..	..	Buckeye Pipe Line		$10,000,000	$50	$1Q	3-14-31	76	53	74½	55	69	39⅞
129½	110	No sales ..	..	..	119	Chesebrough Mfg.		$3,000,000	$25	$1Q‡	3-31-31	161	117	210	130	184⅞	104¼
3½	2	6,200	2¼	2	..	Creole Petroleum	(sh)	5,977,873	N.P.	....	.....	17½	9½	11¾	5⅝	7⅝	3
30	20⅝	50	22¼	22¼	..	Cumberland Pipe Line		$1,500,000	$50	50eQ	3-16-31	114	67	75¾	40	65¾	20¼
31	25¼	50	25¼	25¼	..	Eureka Pipe Line		$5,000,000	$100	$1Q	5- 1-31	88	64½	70½	42	54¾	26
2⅞	1½	100	1½	1½	..	Galena Signal Oil		$16,000,000	$100	....	.....	13	4¼	6½	3	7	2½
72	53	5,200	54	53	53½	Humble Oil & Refining		$74,103,300	$25	50eQ	4- 1-31	114¾	59½	128	74⅛	119	57¼
18¼	11½	8,400	13¼	12½	12¾	Imperial Oil of Canada	(sh)	25,421,768	N.P.	12½eQ	3- 2-31	104	56¾	41	22	30	15
21⅛	13	300	13½	13	13½	Indiana Pipe Line		$3,000,000	$10	25eQ	5-16-31	91⅞	74⅜	41⅞	26	41	14½
15½	11	21,100	12¼	11⅝	12	International Petroleum	(sh)	14,247,088	N.P.	25eQ	3-16-31	55	35	30⅜	15	24	11⅜
17½	12¼	300	13½	13¼	..	National Transit		$6,362,500	$12.50	25eQ§	4-16-31	32⅜	19⅜	25⅛	10⅛	22⅜	11½
14½	10	No sales ..	..	..	..	New York Transit		$1,000,000	$10	25eQ	4-15-31	75	38½	17½	10	21⅜	10⅛
30	28	No sales ..	..	..	..	Northern Pipe Line		$2,000,000	$50	$28A	1- 2-31	69	56½	63	41	54	26¼
15½	8	No sales ..	..	..	..	Penn Mex Fuel		$10,000,000	$25	....	12-15-30	84	28	44½	20	32	12
8	6	No sales ..	..	..	..	Solar Refining		$4,000,000	$25	....	12-20-29	..	..	50	29	33	4⅞
15	10	No sales ..	..	..	..	Southern Pipe Line		$1,000,000	$10	50e	3- 2-31	19	15	22½	13	20⅞	8⅜
23⅞	12½	2,300	14¼	12½	13¾	South Penn Oil		$30,000,000	$25	25eQ	3-31-31	71⅞	36¾	60¼	35⅛	45⅞	16⅛
36	33	No sales ..	..	..	..	Southwest Pennsylvania Pipe Line		$1,750,000	$50	$1Q	3-16-31	102	70	70	60	64	32
38½	24⅝	19,800	27⅝	25⅞	26⅞	Standard Oil of Indiana		$348,175,069	$25	50eQ	3-16-31	95⅞	70⅞	63	45	59⅞	30
23⅝	17⅛	4,300	18¾	17⅝	18	Standard Oil of Kentucky		$25,654,516	$10	40eQ	3-31-31	179¾	122¼	46⅞	29	40½	18⅝
36½	23	200	24¼	24¼	..	Standard Oil of Nebraska		$4,649,225	$25	50eQ	3-20-31	54⅞	39⅞	50¼	40	48⅞	34⅝
62½	48¼	600	50	48¼	..	Standard Oil of Ohio		$14,000,000	$25	62½eQ	4- 1-31	134	71	129	60	108½	43¼
3½	2¾	200	2¾	2¾	..	Swan-Finch Co.		$861,406	$25	....	1-15-29	23¼	16	18	10	10	4
69¾	31½	54,100	41	31½	34½	Vacuum Oil Co.		$126,180,350	$25	50eQ	3-20-31	111	72	133¾	75	97⅛	45⅜

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus 50 cents extra. §Plus 10 cents extra.

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending May 9)

1931 High	1931 Low	Week ending May 9 Sales	Week ending May 9 High	Week ending May 9 Low	Close May 13	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
1¾	⅝	9,300	1	¾	¾	American Maracaibo	(sh)	700,000	N.P.	....	.....	9½	3⅛	8⅝	1⅛	4½	½
16⅞	10	No sales	..	..	..	British American Oil Corp. (new) coup.		1,311,321	N.P.	20cQ	4- 1-31	55	32¾	62	7⅞	23	13⅜
2⅜	½	4,200	1⅜	1¼	1¼	Carib Syndicate		$131,250	25c	....	.....	4½	3⅞	4⅞	1	2¾	⅝
20¾	13½	93,300	15¾	14¾	14⅝	Cities Service	(sh)	24,290,359	N.P.	30cA‡	5- 1-31	90⅞	54	68⅛	20	44¼	13
84¾	79	2,300	80¼	79	79⅝	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	5- 1-31	103¼	94½	98¾	84	93⅞	78¼
½	1/16	3,400	3/16	3/16	..	Colombia Syndicate		$2,000,000	$1	....	.....	3¼	.76	2	½	¾	⅛
2¾	1½	No sales	..	..	..	Consolidated Royal		$5,000,000	$10	7½cQ	4-25-31	8⅞	6¼	11⅛	2½	5⅞	2
⅝	⅜	No sales	..	..	..	Crown Central		.....	....	....	.....	..	..	..	..	..	..
5	3½	No sales	..	..	..	Darby Petroleum		1,019,392	N.P.	....	10-15-30	33½	3¼	26	6½	21¾	4¼
6	2⅝	400	3	3	..	Derby Oil & Refining	(sh)	500,000	N.P.	....	.....	2¼	1	11	2	11	2
40⅛	26	475	30⅝	26	..	Derby Oil & Refining pfd.		48,500	N.P.	....	.....	21½	7½	44	20¾	60	30
75½	50	3,000	52½	50	51½	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	4- 1-31	165	101⅛	209	115	166⅞	58½
⅝	⅜	12,000	½	⅜	⅜	Intercontinental Petroleum		$5,682,000	$5	....	.....	3⅜	1	2⅞	⅜	1¾	⅜
1⅞	⅝	1,200	¾	¾	½	Kirby Petroleum	(sh)	750,000	N.P.	....	.....	3	1¼	3⅝	1¼	3	⅞
1½	½	700	¾	⅝	..	Leonard Oil & Development		$50,000,000	$25	....	.....	9⅜	5⅛	6⅛	1	4⅜	½
6¾	4½	No sales	..	..	..	Lion Oil & Refining	(sh)	250,000	N.P.	....	10-27-30	43⅞	20	38⅞	18	29	4⅞
25	14⅛	12,100	17¼	14⅛	17½	Lone Star Gas	(sh)	5,000,000	N.P.	22cQ	3-31-31	69⅛	48½	67⅞	28	55⅞	19⅝
½	⅛	4,700	⅜	¼	..	Magdalena Syndicate	(sh)	850,000	$1	....	.....	1⅞	½	1¼	¼	½	⅛
5	3	100	4	4	..	Margay Oil Corp.		160,000	N.P.	....	7-10-30	48½	32	38½	14	16	3
4⅞	1½	400	3	3	..	Mexico-Ohio Oil Co.		500,000	N.P.	....	.....	8	2¾	6⅜	2¼	7½	1¾
½	¼	No sales	..	..	..	Mountain & Gulf		$4,000,000	$1	1cQ	4-15-31	1¾	.76	1½	¼	¾	⅜
5⅞	3¾	400	3⅞	3⅞	3⅞	Mountain Producers		$1,682,182	$10	25cQ	4- 1-31	28⅞	19½	22⅞	7	12⅛	3¾
1½	1	600	1⅛	1	1⅛	New Bradford Oil		$1,095,291	$5	7cQ	4-15-31	5⅝	4¼	5	2½	3½	1⅛
3	1⅞	100	2	2	2	New Mexico and Arizona		$1,000,000	$1	....	.....	11⅞	7⅛	9⅜	2¼	7¼	1½
3¼	1¾	No sales	..	..	..	North Central Texas	(sh)	400,000	N.P.	....	9- 2-30	14¼	8½	18½	6⅛	11¼	2⅛
½	¼	7,200	7/16	4/16	⅜	Pandem	(sh)	489,875	N.P.	....	.....	6	2⅛	3½	½	2½	¼
2	1⅛	100	1¼	1⅛	1	Pantapec Oil	(sh)	1,506,000	N.P.	....	.....	15⅝	8½	10½	1⅞	4⅜	⅞
1½	⅞	1,100	1	⅞	..	Reiter-Foster	(sh)	388,584	N.P.	....	12- 2-29	12⅞	4⅛	8½	1⅛	5⅜	1
3	2	No sales	..	..	..	Ryan Consolidated	(sh)	500,000	N.P.	....	.....	12	4⅛	11	3	8⅝	2
1⅜	⅞	200	1	1	..	Salt Creek Consolidated	(sh)	1,286,300	$10	7cQ	4- 1-31	7¼	5½	5⅞	1⅞	2½	½
7¾	5	2,500	5⅛	5	5⅛	Salt Creek Producers	(sh)	1,496,859	$10	35cQ	5- 1-31	35	23⅛	25⅞	9	15¼	5¼
5¼	2¼	4,200	2⅝	2¼	2¼	Sunray Oil Corp.	(sh)	1,163,185	$5	5%Q§	4-15-31	..	..	12	5⅝	10	2
1⅞	¾	900	1	⅞	..	Venezuelan Petroleum	(sh)	755,090	$5	....	2-15-30	9⅛	4¾	6½	1¾	4½	⅜
3½	1½	No sales	..	..	..	Woodley Petroleum		$500,000	$1	....	3-31-29	8¼	4⅞	9½	2	5	½
⅞	⅜	No sales	..	..	..	Y Oil & Gas		100,000	N.P.	....	.....	8⅜	2⅛	2⅞	½	2½	⅝

*Ex-dividend. †Unit of trading less than 100 shares. ‡Payable monthly and monthly stock dividend of one-half per cent. §Paid in lieu of regular cash dividend of 2 per cent.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending May 9)

1931 High	1931 Low	Week ending May 9 Sales	Week ending May 9 High	Week ending May 9 Low	Close May 13	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1928 High	1928 Low	1929 High	1929 Low	1930 High	1930 Low
23	16½	1,500	18⅛	17	17⅝	Amerada Corp.	(sh)	922,075	N.P.	50cQ	4-30-31	43⅞	27⅛	42⅝	17½	31½	16½
12⅜	5	400	7⅜	6⅛	..	American Republics Corp.	(sh)	209,180	N.P.	$3.50SA	12-10-30	85	51⅛	64⅜	12½	37	5⅛
31	26½	10	29⅜	29⅜	..	Associated Oil		$57,260,300	$25	50cQ	3-31-31	53⅜	37½	47¼	34½	51	30
25⅝	12½	18,200	15⅞	14½	15⅛	Atlantic Refining		$66,763,775	$25	25cQ	3-16-31	66⅝	50	77⅞	30	51⅜	16⅝
14½	7½	28,700	8⅜	7½	8	Barnsdall Corp. A		$56,546,600	$25	25cQ	5-11-31	54	20	49⅛	20	34	8⅝
12	6⅛	26,100	7½	6⅝	7⅛	Continental Oil of Delaware	(sh)	4,741,554	N.P.	....	.....	..	..	47⅞	18	30½	7⅜
47	20⅞	12,500	23⅞	21⅛	23⅛	General Asphalt	(sh)	413,333	N.P.	75cQ	3-16-31	94⅞	68	94¾	42¼	71½	22⅜
68½	35¼	4,700	42¾	39	40⅝	Houston Oil		$24,968,600	$100	....	.....	167	79	109	26	116⅞	29¼
14⅛	8¼	4,400	9¾	8¾	9¼	Houston Oil (new)	(sh)	998,744	$25	....	.....	..	..	..	..	11¾	6⅝
4⅝	2¼	1,100	2⅝	2½	2½	Indian Refining		$12,564,070	$10	....	.....	39⅝	9	53	13⅛	17	2
4½	2½	600	3	2⅞	3	Louisiana Oil Refining	(sh)	1,190,063	N.P.	....	.....	19¾	9⅜	18	7	12	3½
3⅜	1⅝	200	1⅞	1⅞	1½	Maracaibo Oil	(sh)	330,000	N.P.	....	.....	25½	12½	18½	5⅛	10⅜	1⅜
20¾	10⅝	39,300	16⅞	14⅜	15¾	Mexican Seaboard	(sh)	1,244,383	N.P.	....	10- 1-24	72	4⅝	59⅜	8¼	37	9¾
16⅜	8	5,400	9⅜	8⅝	8⅞	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	....	.....	44½	25⅛	39⅞	22⅛	32	11
19½	8¼	43,500	10½	8¼	8⅞	Ohio Oil	(sh)	6,648,052	N.P.	....	.....	84	58½	79⅞	64¼	32	16
35⅛	29½	No sales	..	..	..	Pan American P. & T.		$50,084,700	$50	....	12-20-27	50⅞	38¼	69	40½	46½	42
36½	20	100	29	29	..	Pan American P. & T. "B"		$121,110,650	$50	....	12-20-27	59⅞	37¾	69¼	40½	67¼	30
4¼	1¾	100	2¼	2¼	2⅛	Panhandle P. & R.	(sh)	199,370	N.P.	....	.....	21¾	11½	15¼	3	12¾	1⅜
18	10	No sales	..	..	..	Panhandle P. & R. pfd.		$2,564,400	$100	....	.....	108	70	76	47½	20	47½
16⅝	7	10,300	7⅞	7⅜	7¼	Phillips Petroleum	(sh)	2,593,075	N.P.	....	1- 2-31	53⅞	35¼	47	24¼	44⅜	11½
1½	⅝	1,700	⅝	⅝	..	Pierce Oil Corp.		$29,622,831	$25	....	.....	5¼	½	3⅜	1	2½	½
3⅜	1⅜	18,500	1⅜	1⅜	1⅞	Pierce Petroleum	(sh)	2,500,000	N.P.	10c	2-16-31	7	3½	5⅞	½	7⅛	1⅜
20⅜	9½	6,900	11⅜	10	10½	Prairie Oil & Gas		$60,848,000	$25	....	.....	68	46	65⅜	40½	54	11¼
26½	17⅞	2,000	21½	19⅝	19¾	Prairie Pipe Line		$101,250,000	$25	75cQ	3-31-31	280	172	65	45	60	16⅝
6	2⅛	100	3	3	..	Producers & Refiners		$37,438,950	$50	....	9-15-23	29⅞	16	25⅞	4	11⅞	1
16	6½	950	9½	6½	..	Producers & Refiners pfd.		$2,845,350	$50	....	5- 4-25	49⅝	41	46¾	25½	40	11½
11⅞	5½	8,200	6½	6	6¼	Pure Oil		$75,959,250	$25	....	9- 1-30	31⅝	19	30¾	20	27¼	7⅝
6⅜	1¼	5,300	1¾	1¼	1½	Richfield Oil		$52,410,875	N.P.	....	.....	56	23	49⅝	20	9¾	4⅛
10¼	4	3,800	4⅝	4¼	4½	Rio Grande Oil	(sh)	1,236,270	N.P.	....	7-25-30	37½	32	42½	15	25¾	5
42⅝	27½	30,000	31⅛	28⅞	28⅞	Royal Dutch, N. Y.	(sh)	611,303	....	$1.3404	1-30-31	64	44⅝	64	43⅛	56½	36⅞
34	25⅞	No sales	..	..	..	Shell Transport & Trading Co.		£23,985,000	£1	$0.966	1-23-31	47⅞	41⅝	51½	40⅝	48⅜	26
10¼	4¾	19,300	5½	5	5⅛	Shell Union Oil	(sh)	13,066,497	N.P.	....	6-30-30	39¼	23¼	31¾	19	25½	5¼
11	5¾	1,600	6½	5⅞	..	Simms Petroleum		$8,353,620	$10	....	9-15-30	27¼	18⅛	40½	15	37	5⅝
15⅞	8½	50,600	9¾	8⅝	8⅝	Sinclair Consolidated	(sh)	5,500,000	N.P.	25cQ	4-15-31	46¾	17⅜	45	21	32	9¾
103	95	1,100	95½	95	87	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	5-16-31	110	102½	111	103	112¼	86
12⅞	5	1,100	5⅞	5⅛	4½	Skelly Oil		$27,441,250	$25	....	12-15-30	42⅝	25	40½	28	42	10⅛
51¾	33	18,200	39	36⅛	37⅝	Standard of California	(sh)	12,594,098	N.P.	62½cQ	3-16-31	80	63	81⅞	51½	75	42¼
19	11	400	12½	12⅛	11½	Standard of Kansas		$8,000,000	$25	25cQ	3-16-31	37¾	15	33⅜	18	49	14⅜
52½	33½	51,400	38½	36⅝	36⅝	Standard Oil of New Jersey		$634,999,200	$25	25cQ‡	3-16-31	59⅜	37¾	83	49	84⅞	32½
26	17⅜	27,500	19⅞	18⅝	18¾	Standard Oil of New York		$445,223,675	$25	40cQ	3-16-31	33¼	28¾	48⅛	31¾	40⅜	19⅝
45¼	34⅛	300	35	35	..	Sun Oil	(sh)	1,416,869	N.P.	25cQ	3-16-31	77	31½	68⅜	55	70	39
1⅜	¾	900	1	¾	1	Superior Oil Corp.	(sh)	776,979	N.P.	....	12-20-30	..	..	24	5¼	9⅜	¾
36¼	20	48,600	23	20¼	19½	The Texas Corporation		$246,204,900	$25	75cQ	4- 1-31	74¾	50	71⅞	50	60½	28¼
6½	3½	500	4	4	..	Texas Pacific Coal & Oil Co.		$9,304,890	$10	....	12-31-29	26⅝	12⅛	23⅞	9½	14½	4
18	10½	No sales	..	..	..	Tide Water Oil	(sh)	2,191,759	N.P.	20cQ	3-31-31	41½	19⅝	40	14	31	13
83	67	No sales	..	..	..	Tide Water Oil pfd.	(sh)	19,947,000	N.P.	$1.25Q	5-16-31	100⅛	86	97½	85⅛	94⅞	71
9	4½	5,600	5	4⅝	5	Tide Water Associated	(sh)	5,560,424	N.P.	30c8A	2-16-31	25	14¾	23½	10	17⅜	5⅞
68	49	1,200	50½	49	48½	Tide Water Associated pfd.		$73,284,500	....	$1.50Q	4- 1-31	..	..	90⅞	74⅛	89¾	55
26⅝	14	4,200	18⅛	17	17	Union Oil of California		$104,342,375	$25	50cQ	5- 9-31	58	42⅜	57	42⅛	50	10⅛
25¼	20	100	21	21	..	Union Tank Car	(sh)	1,254,048	$100	40cQ	3- 2-31	128¼	110	163¾	121⅞	38½	23
7⅜	3⅝	900	3¾	3⅝	..	Warner-Quinlan	(sh)	632,948	N.P.	....	7- 1-30	44⅞	26	42⅞	15	27	4¼
9⅜	6⅛	700	7	6½	..	Wilcox Oil & Gas	(sh)	428,907	N.P.	....	5-10-28	..	..	29¾	12⅞	21	6½

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus extra dividend of 25 cents.

In comparing highs and lows for the several years in the three tables, it will be necessary to take into consideration cases where there have been stock split-ups.

EAST BELIEVES BOTTOM HAS NOW BEEN REACHED

(Continued from Page 139)

Notwithstanding further cuts in refinery operations at Atlantic Seaboard refineries, fuel oil stocks continue to gain, holdings on May 9 totaling 8,375,000 bbls. at East Coast plants, as compared with stocks of 8,027,000 bbls. on hand at the close of the previous week.

Diesel Oil

The market is quiet and unchanged at the recently lowered quotations of $1.65 per barrel. Demand is well sustained, and current gallonage in some instances is running a little ahead of last year.

While the 10-cent price cut initiated at New York has been extended to other Atlantic and Gulf ports, the market is still a little easy even at the reduced basis, reflecting the continued oversupply of cheap crude and the existence of weak holdings of Diesel oil at some points, notably the Gulf and California.

Gas Oil

Recent drastic price cuts, carrying the posted quotation for 28 plus recycled oil down from 5¼ to 4 cents per gallon at refineries in East Coast territory, appear to have restored some degree of stability to the situation, and leading sellers are now adhering to the posted quotation, although some of the smaller sellers are willing to book for prompt and nearby shipment under the 4-cent level.

Demand is near its low ebb for the year, and refiners look for continued quiet, with probably more or less price shading on spot sales, until next fall, when a seasonal increase in consumption will make itself felt in the market.

Wax

Pricewise, the market was without quotable change during the week. Although quoted prices are lower than the asking quotations of some sellers, the market is far from firm even at the low figures named, and with continued slack domestic demand and heavy refinery stocks the outlook is far from encouraging.

A little improvement in export inquiry developed during the week, and traders were expressing the belief that a heavier foreign demand was in sight, which should react to the advantage of the price structure.

Gulf Coast Export Market

A cargo of 7,500 tons of 375 endpoint gasoline for first-half June shipment to England was closed during the week at 4¼ cents per gallon.

French buyers were inquiring at the Gulf Coast and California for about 20,000 tons of 64-66 for June shipment, but the business was expected to go to Rumania, as buyers were unwilling to go over 4 cents per gallon, at which price it was said business could be done with Rumanian sellers.

A local operator was negotiating this week a sale of 500,000 bbls. of Rusk County crude, for June-July-August shipment to France, at 80 cents per barrel f.o.b. ship, and it was expected that further business of this nature would develop shortly.

Mexican and Venezuelan crudes were quiet during the week. Business was reported on Venesuelan oil, but all of this was done at private contract, details not reaching the market here.

Petroleum Exports

Export movement of refined products through the local port fell off somewhat during the week ended May 9, and new business was likewise lagging. Weak markets on principal refined proudcts were tending to weaken export buyers' confidence in the market situation.

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	May 9	May 2	Apr. 25
Gasoline	60,000	10,000	330,000
Naphtha	65,000	275,000	75,000
Kerosene	10,000	20,000	15,000
Fuel oil	18,000	5,000	5,000
Lubricating oil	1,175,000	2,360,000	2,125,000
Pet. refined	875,000	495,000	410,000
	Pounds		
Petrolatum		260,000	260,000
Paraffin wax	1,565,000	1,500,000	2,375,000
Refined	75,000	550,000	740,000
Scale	725,000	110,000	1,320,000
Lub grease	610,000	425,000	850,000

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended May 9 totaled 1,377,000 bbls., a daily average of 196,714 bbls., compared with 1,785,000 bbls., a daily average of 255,000 bbls. for the previous week and a daily average of 214,679 bbls. for the four weeks ended May 9. Details follow:

(Barrels of 42 Gallons)

At Atlantic Coast Ports—	
Baltimore	393,000
Boston	68,000
New York	565,000
Philadelphia	148,000
Others	203,000
Total	1,377,000
Daily average	196,714
At Gulf Coast Ports—	
All ports	None
At Atlantic and Gulf Coast Ports—	
Total	1,377,000
Daily average	196,714
Daily average four weeks	214,679

Distribution of total oil imports is as follows:

Crude	775,000
Gasoline	260,000
Fuel oil	342,000

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended May 9 totaled 215,000 bbls., a daily average of 30,714 bbls., compared with 391,000 bbls., a daily average of 55,857 bbls. for the previous week and a daily average of 53,536 bbls. for the four weeks ended May 9. Details follow:

(Barrels of 42 Gallons)

At Atlantic Coast Ports—	
Boston	95,000
New York	3,000
Philadelphia	117,000
Total	215,000
Daily average	30,714
At Gulf Coast Ports—	
All ports	None
At Atlantic and Gulf Coast Ports—	
Total	215,000
Daily average	30,714
Daily average four weeks	53,536

Distribution of total California oil receipts is as follows:

Gasoline	212,000
Lubs	3,000

Shipments of California refined products for Atlantic and Gulf Coast ports during the week (with identity of owner of tanker moving the oil where such owner is an oil company) follow:

To New York—93,500 bbls. of petroleum distillate on the Standard Arrow (Standard Oil Co. of New York), and 80,000 bbls. of gasoline on the Dilworth (Richfield).

To Bayonne—129,500 bbls. of gasoline on the Tamiahua (Richfield).

To Philadelphia—116,200 bbls. of gasoline on the Sun (Sun Oil Co.).

To Providence—73,300 bbls. of gasoline on the Roakoke (The Texas Company).

Charter Market

Limited inquiry was reported from the tanker charter market during the past week, and asking rates continued near record levels in many instances. Most of the current activity is still centered in the Black Sea trade, dull markets being reported for coastwise, intercoastal, and transatlantic movement. Fixtures reported during the week were as follows:

Motorship Solstad (Nor.), 3,435 tons net, clean, Gulf to French Atlantic ports, 9s, June loading.

Motorship Anna Maersk (Dan.), 8,000 tons gas and/or fuel oil, Batum to Continent, 7s 3d, May/June loading.

Steamer Utilitas (It.), 3,026 tons net, continued for two months in present trade, 3s 9d.

Steamer Irini (Grk.), 5,000 tons, clean, Black Sea to French Atlantic, 8s 6d, with 6d extra if two ports, prompt loading.

Steamer Oilshipper (Br.), 7,500 tons, clean, Black Sea to U.K./Continent, 7s, May/June loading.

Steamer Cities Service Kansas (Am.), 4,678 tons net, Gulf to North of Hatteras, 15 cents, May loading.

Steamer Cities Service Koolmotor (Am.), 4,186 tons net, Gulf to North of Hatteras, 15 cents, June loading.

Steamer Cities Service Missouri (Am.), 4,612 tons net, Gulf to North of Hatteras, 15 cents option, Tampico loading, 18 cents, June loading.

LITTLE SPOT MARKET IN THE CHICAGO AREA

(Continued from Page 138)

ficient supply of oil fuel available in the Chicago district to warrant the establishment of an oil burner manufacturing branch here.

Fuel Oils

The improved outlook for the industrials who have been operating at far below capacity, and the prospect that increased cracking operations will be in order to improve motor fuel, point to better fuel oil market. Standard Oil Co. of Indiana is marketing a new fuel oil of 18 gravity which is credited with unusual properties and sells at the tank wagon price 5 cents in quantities of 400 or more gallons. This fuel oil is said to have a low sulphur content and a low cold test, running freely at 32° F.

Lubricating Oils

The seasonal increase in the movement of bright stocks and neutrals to compounders is on with the price markets experiencing the instability and depression common to those of the other products. Prospect of a downward revision in the retail price of lubricants has been pointed out above.

ROCKY MOUNTAIN AREA

(Continued from Page 133)

tools out and will run whipstock to try to drill by. Total depth is 2,415 feet.

UTAH

Utah Southern Oil Co.'s No. 1 Balsey, C NE NE, Section 31-23-21, Salt Valley, in Grand County, is drilling at 2,880 feet and still is in salt, and the Diamond Oil Co.'s No. 1, SE NW, Section 16-8s-5e, Utah County, is drilling at 3,185 feet in brown shale.

Rocky Mountain Production

Average daily production in week ending May 16:

WYOMING	
Salt Creek	25,070
Big Muddy	1,910
Byron	5
Dallas-Derby	620
Dutton Creek	70
Elk Basin	650
Ferris	30
Frannie	890
Grass Creek	2,120
Hudson	390
LaBarge	1,350
Lance Creek	200
Lost Soldier	4,400
Lovell	
Oregon Basin	1,380
Osage	1,130
Rock River	1,950
Poison Spider	220
Simpson Ridge	
South Casper	380
Teapot	20
Warm Springs	
Total Wyoming	42,755
MONTANA	
Buckley-Border	760
Cat Creek	1,070
Dry Creek	550
Kevin-Sunburst	4,420
Lake Basin	50
Pondera	1,610
Total Montana	8,460
COLORADO	
Florence	360
Fort Collins	1,090
Iles	980
Moffat	980
Orchard	350
Rangely	20
Tow Creek	360
Total Colorado	4,140
NEW MEXICO	
Rattlesnake	1,050
Hogback	460
Table Mesa	80
Artesia	1,212
Cap Rock	196
Getty	200
Hobbs	36,600
Jal	1,100
Lea City	2,588
Eunice	645
Texas-Pacific area	
Total New Mexico	44,131
Total Rocky Mountain fields	99,516
Total previous week	92,299
Difference	7,217

OPERATIONS DEPENDENT UPON OTHER INDUSTRIES

(Continued from Page 141)

immediate future from gasoline plants treating gas supplied to large transporting lines now under construction.

High pressure natural gasoline plants, such as will be on these lines, can be operated much more economically than can low pressure gasoline plants treating casinghead gas, on account of the absence of field lines, compressors to boost the pressure and, also, the low oil and gas ratio required, due to the comparatively high gas pressures.

Leading carbon black companies have been participating actively in the natural gas business and it is anticipated that the amount of natural gasoline produced from natural gas used in the manufacture of carbon black will continue to decrease, on account of the diminishing quantity of gas used for this purpose.

The chief reason for the decrease is the competition offered by long natural gas lines.

The expansion of the carbon black industry during the past three or four years in Texas has been due to the immense volume of residue casinghead gas produced in the Panhandle oil fields, which has exceeded the ability of pipe lines to market, or of local communities or industries to consume. Before the advent of carbon black plants, this residue casinghead gas, being unmarketable for any purpose, had been blown off into the air. At the majority of gasoline plants treating casinghead gas in the Panhandle, whatever value the residue gas has today may be attributed solely to the carbon black industry.

The yearly capacity of carbon black plants in the United States is about 400,000,000 pounds, while the estimated production for 1931 is 220,000,000 pounds. This curtailment in production is brought about by the fact that there is a large supply of carbon black in storage.

It is problematical as to the portion of casinghead gas now being blown into the air that will be utilized, or converted into natural gas pipe lines. This is due to the fact that, especially in the Texas Panhandle, there is such a vast amount of natural gas under comparatively high pressure, that it would not seem economical, particularly within the immediate future, to try and compress gas for pipe line delivery that is now being blown into the air, on account of compression costs.

The future marketing of residue casinghead gas from gasoline plants to carbon black plants is also problematical, in view of the depressed condition of the carbon black industry. On account of the underconsumption, or overproduction, of carbon black and, with the large stocks on hand, it would seem that there will be a slow recovery of the carbon black industry to a point where prices for the product will give the manufacturer a reasonable margin of profit.

Indications are that there will be very little, if any, expansion in the construction of carbon black plants during the next few years, and it is probable that casinghead gas, in oil fields remote from the centers of civilization—before markets for gas can be developed by the construction of pipe lines—will prove the raw material for carbon blacks in the future. The gasoline will, of course, be extracted before the gas is burned. Thus, in furning a market for residue gas that would otherwise be utterly wasted, the carbon black industry is performing a service of the highest value to the cause of conservation.

J. W. METTLER DIES

GREAT FALLS, Mont., May 16.—J. W. Mettler, 62, oil man with interests in this State and Pennsylvania, died here this week. Interment will be made at Petrolia, Butler County, Pennsylvania.

HANCOCK AWARDED CONTRACT

The Hancock Oil Co. with a refinery at Long Beach, Calif., has been awarded a contract to supply fuel oil requirements for Los Angeles harbor. The contract involves approximately $500,000.

SCHEDULE OF GROUP SESSIONS A.P.I. MEET

(Continued from Page 66)

issued by the American Petroleum Institute's Division of Production under date of May 1, 1931, as a revised and second edition of specifications A.P.I. Standards No. 12-B issued in January, 1931.

At a committee meeting in Chicago last November, it was agreed that bolted tank specifications should be reviewed and revised and that the right to use the A.P.I. monogram on bolted tanks temporarily be rescinded. The revised specifications will be presented for final acceptance at the midyear meeting of the Division of Production at Dallas, Tex., June 3 and 4.

TEXAS SOLONS CANNOT REACH HOWSLEY BILL

(Continued from Page 33)

Fred Upchurch, assistant attorney general of Texas, announced the filing of five suits in connection with alleged violation of proration in East Texas.

The suits were filed against the British-American Syndicate, the Cranfill-Reynolds Oil Co., the Pilot Co., Alfred Macmillan and the Macmillan Petroleum Co.

The first three suits sought penalties up to $1,000 a day for claimed violation of the Railroad Commission's proration order. Those against Macmillan and the Macmillan corporation alleged waste.

Upchurch stated papers were mailed yesterday to Rusk and Gregg County courts where the suits had to be filed.

Wilbur May Not Attend

A Washington dispatch says Secretary Wilbur does not expect to attend the August meeting in Denver of the Oil States Advisory Committee called to consider the proposed interstate compact. Although greatly interested, he recognizes the questions involved as wholly state affairs.

The secretary holds that the making of a state compact must be undertaken by the states and the oil industry, if it is undertaken at all; that the federal Government, as a landowner, has done everything possible for the conservation of oil and gas through the control of drilling and unit operation to prevent waste. He thinks that the making of a compact, or compacts, is particularly incumbent upon the industry; that unless there is control and stabilization Congress will undertake control with price fixing as a consequence.

The secretary believes that the word "conservation," as now used, is misunderstood; that the facts now known about production have changed the meaning of the term which originally meant "saving for future generations," an idea resulting from the fear that there would be a future shortage unless the present generation denied itself the prudent and economical use of oil; that now it is not so much a question of saving oil and gas as of saving the industry by control of drilling and production by proration; in other words, stabilization and equalization for the good of the industry rather than for future generations, although they will benefit.

Secretary Wilbur believes that the situation can be saved if East Texas is held down to about 200,000 bbls. But, in his view, the federal Government has done all it can do on the public domain to avoid overproduction. He has no "I-told-you-so" thought about the meeting at Denver.

It is likely the Department of the Interior will have in print about the time of the Denver meeting a volume entitled "Conservation in the Interior Department." The manuscript is ready for the printer. It consists of 13 chapters, four of which will relate to oil and gas. The chapter headings will be "Oil Conservation," "Kettleman Hills," "Natural Gas," and "Can States Act on Oil Conservation." Those chapters have been prepared by Secretary Wilbur and William Atherton DuPuy, the latter chief of the office of information in the Department of the Interior.

WILL INSPECT COATINGS IN SPINDLETOP AREA

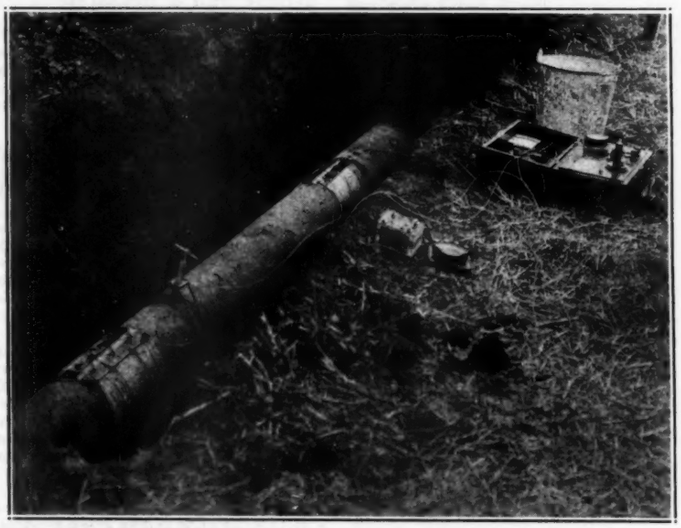
(Continued from Page 42)

tively inexpensive, easy to handle and the results are recorded almost instantly.

The action of the 22½-volt current in passing through this circuit and back to the McCullom earth meter is such that particles of the rust or products of corrosion on the pipe are transmitted to the surface of the sensitized paper through the mud solution.

Wherever the current passes there will be found a dark blue mark on the paper when it is removed from under the wet cloth wrapper and the area of the markings will indicate very accurately the size and the position of corrosion products on the surface of the pipe.

This test is so delicate that in one instance a tiny spot no larger than a pin head was recorded on the sensitized paper and when the coating was removed and the pipe laid bare at the place indicated it was found that there was a small speck of rust in a corrosion pit .003 of an inch deep in the pipe. No other break in this particular piece of coating was noted and no other rust found on the pipe.



Set-up for sensitised paper corrosion test conducted by Doctor Scott near Skiatook, Okla. McCullom earth meter on bank, with two sections of pipe being tested.

The tests do not take long to make. After everything is in readiness the current is permitted to flow through the circuit for not to exceed 6 minutes and in many cases where the coating has failed badly the test will be completed in much less time. The operator judges the length of time required for the flow of current in the second portion of this test by the results already indicated by the first portion of the test when the lower voltage was used.

All Invited to Test

The A.P.I. Research Committee on Corrosion and Doctor Scott invite anyone interested to be at the tests to be conducted near Spindletop, Tex., as soon after June 4 as possible and see for themselves these various inspection operations. Special invitations are being sent to members of the Corrosion Committee of the A.P.I. and the American Gas Association and it is hoped that they will have representatives present.

In addition to the work to be done as outlined above Charles Fitzgerald, superintendent of the Pure Oil Pipe Line Co. of Texas, Dallas, Tex., has courteously agreed to lay open for inspection a wide variety of materials that his company has under test in the Spindletop area. This test is being conducted under the supervision of Mr. Fitzgerald and he is opening it to public inspection at this time and hopes that all interested will avail themselves of the opportunity to see the results along with the work to be done under the supervision of Doctor Scott.

If possible E. R. Shepard, the inventor of the Shepard earth resistivity meter, will be at the Spindletop test and set up a duplicate of the conductivity testing equipment now being used by Doctors Logan and Scott so that the electrical examination of the test coatings may be conducted simultaneously on both operating lines and the short coated nipples.

Doctor Scott has requested Doctor Logan to have their Mr. Taylor make drawing of the Spindletop layout and print a large number of copies of the drawing which will be presented to the visitors at the test so that they may keep an accurate record of all results.

A scheme for identifying the various coatings along the line and taking observations of the pinhole patterns obtained at each test is being worked out by Doctor Scott and Mr. Johnson. This is for the purpose of perfecting their system of recording results, as the method as now being used shows clearly when the pipe has been corroded.

Doctor Scott will be at the American Petroleum Institute meeting in Dallas, Tex., June 3 and 4 and can be seen there for definite details as to just when and where the tests at Spindletop will be held or he can be reached by telegram or letter in care of Carl A. Young, 1508 Kirby Building, Dallas, Tex.

NEW DEVELOPMENTS IN GASOLINE PLANTS

(Continued from Page 34)

realize the future trend of fractionation. In as much as fractionation is being reviewed by S. S. Smith in another paper at this meeting, no further elaboration is necessary.

No material changes have taken place in the storage or treating of gasoline. The 10'x40' gasoline tank so commonly used, is well on the way toward standardization by our association.

Loading racks at some plants are becoming as complicated as those at the refineries so as to properly load the increasing number of products.

Few changes have occurred in the tank cars for transporting natural gasoline. Some improvement has been made in the safety valves and the bottom outlet valves. Due probably more to precedent than to logic, tank cars are still vented to atmospheric pressure at their destination. On the other hand, the lack of a satisfactory device for gauging the cars while under pressure, may be a course for the continuation of this practice.

Fractional Analyses

Apparatus for the fundamental analysis of gases and liquids has done much toward increasing the efficiency of absorption and fractionating equipment. The advantage in dealing with a quantitative measurement of individual hydrocarbons and previous methods is the difference between guessing and knowing the changes in composition in different features of plant equipment. In designing plants with the evidence of the fundamental analysis on the gas there is a tendency, in striving for efficiency, to overlook the possible changes in composition.

Equipment manufacturers are justly complaining of the high engineering costs which they are many times asked to assume in the requests to show composition analysis on all phases of plant operations. It would appear more logical to give the manufacturers the conditions of operation and a request made for apparatus to meet certain conditions. If anything more than this is asked it would seem only fair to pay for the engineering service rendered and not expect it to be absorbed in the purchase price of equipment.

The fundamental analysis apparatus is a rather highly technical piece of equipment and calls for considerable training and experience on the part of the operator before results can be relied upon. The interpretation of the results often calls for the services of a technically trained man. Further, due to the expense, the time consumed in making the tests and the difficulty in obtaining liquefied nitrogen, the apparatus has been limited in its application to general use. Charcoal and Engler distillation tests have little meaning in striving for maximum plant efficiency and there is apparent need for rapid tests which can be made by the operators, based upon the results of the fundamental analysis.

No review of developments in the natural gasoline industry would be complete unless it recognized the advances made in recent years in control equipment. Regulators for both temperature and pressures can be obtained to control to most any degree of precision desired. Without them many features of a modern plant would be useless. An effort should be made, especially in the case of temperature regulators, to simplify the apparatus which might better enable the ordinary plant operator to adjust it.

FREIGHT RATES FOR OIL WELL SUPPLIES REDUCED

WASHINGTON, D. C., May 18.—With the announcement by the Interstate Commerce Commission that lower rates had been established on oil well supplies and rig irons from Oil City, Pa., and Marion, Ind., to points in the Southwest, it was revealed that the decision was not unanimous and that certain members of the commission consider the new rates as still unreasonable.

The rates ordered are to be applicable to all destinations in the Southwest and will mean reductions of 6 to 16 or 18 cents a hundred pounds, depending on the size of the shipment and the distance traversed.

The decision is the outcome of a hearing held at the request of most of the leading manufacturers of oil well supplies in the country, for the purpose of prescribing reasonable rates on these commodities. It was alleged by the complainants that the rail movement of oil well supplies and rig irons in the Southwest is greater than in any other section, but that the freight rates are relatively higher there than elsewhere. In this view the commission concurred, with the result that lower rates have been ordered. The commission prescribed that the new rates shall not exceed column 42½ rates.

FREE GAS FOR FRESNO

LOS ANGELES, Calif., May 16.—The Fresno city commission has accepted the free gas offer of M. D. Huffman to the extent of 2,000,000 feet of gas daily. A bond issue is to be submitted to the people at the next municipal election and if it carries gas will be delivered to the city within two years.

It was estimated it would cost the city approximately $2,000,000 to build a pipe line to the city from Kettleman Hills and erect a power plant, but that the city in this manner could save approximately $75,000 on the annual power bill.

NEW JERSEY STANDARD'S EARNINGS DECLINED

(Continued from Page 148)

iaries had only 29 wells drilling at the end of this year, against 97 at the beginning."

Production was almost evenly divided between foreign and domestic sources.

The report asserts that low prices make it difficult to operate profitably plants for recovery of gasoline from casinghead and natural gas and that "improvements in cracking and in the recovery of stable light fractions from refinery gases have taken from natural gasoline its former premium value."

Refining Operations

The company reduced runs at refineries in 1930 by 16,000,000 bbls. to 180,676,000 bbls., the decrease being all at domestic plants and made in line with the reduction of one-seventh proposed by the Federal Oil Conservation Board. After asserting that there was little discoverable relationship between drilling of wells generally and the consumption of petroleum products, Mr. Teagle said:

"In order to obtain a market for their increased crude production some producers, who are also refiners, manufacture too much gasoline. They and other refiners, who purchased their crude under posted prices, dumped this gasoline upon the distributor and the latter found but one way to place it with the consumer—by cutting prices.

"Thus, instead of allowing the consumer to dictate the amount of gasoline needed and the refiner, in turn, to notify the producer of the crude required to supply this quantity of gasoline, the process has been completely reversed.

"The disastrous result of such a policy was experienced in 1930, when gasoline was sold primarily to get it out of the tanks and make room for more. Efforts to dispose of this surplus led to the granting of excessive discounts and other forms of price concession, as well as to competition for outlets at points far removed from logical geographical marketing areas.

Surplus Supplies

"The pressure of surplus supplies continued to expand retail outlets, of which there are now at least three for every one needed to serve the consumer conveniently and expeditiously. The amount of capital tied up in filling stations built in duplication of existing, adequate outlets is everywhere evident and the investment and labor charges incident to their operation account for a large part of today's high marketing expense. A moratorium upon the building of more service stations, closing those which cannot be operated economically and abandonment of unsound marketing practices would benefit the industry and public alike."

Foreign Situation

Taking up the foreign situation, he spoke in some detail of the reactionary markets created by Russian and Rumanian dumping of refined products. "Having practically no capital invested in expropriated properties and paying labor in depreciated currency, Russia continued dumping at prices that disregarded legitimate costs," he said. "A substantial increase in production stimulated Rumania's effort to expand export markets. The resulting competition in European countries brought about unremunerative price levels.

"In South America the year brought unusual political and economic disturbances. Revolutions in the Argentine and Brazil overturned the governments. These revolutions and threats of civil warfare in the smaller countries intensified existing economic difficulties. A serious drop in exchange reduced purchasing power and necessitated a restriction of credits. The operations of the company's subsidiaries in both Europe and South America were unavoidably affected, and their ability to retain substantially their volume of business is gratifying."

Overexpansion Blamed

Concluding, Mr. Teagle said: "Over the last 10 years the industry has attracted capital in excess of its actual requirements, resulting in overexpansion of all its facilities. Even if the past year had been one of normal growth the demands of the consuming market would have fallen far short of employing to its full capacity the machinery of the industry. In 1930, as in previous years, the competitive effort to keep production and manufacturing plants in operation told heavily upon earnings. Had the industry not delayed in adjusting posted prices of crude to product prices, some of the unnecessary drilling might have been avoided. So long as present conditions continue the restoration of the industry to a sound economic basis cannot be foreseen. Time will necessarily be required for correction.

"In the meantime the industry must seek through reduction of operating and administration costs such relief as it may be able to obtain, until the absorption of its surplus stocks removes the incentive to overcompetition which has so severely affected its earning power.

Economic Correction

"The anomaly of both raw material and finished products selling below cost necessarily carries its own eventual correction and there are not lacking certain signs that this economic force is already exerting itself. The remedial measures from which the industry will benefit include the action of federal and state governments in prorating producing fields, restrictions on drilling and extension of the policy of unit operation to new pools. In addition, the industry should continue to draw upon stocks until they are materially reduced and should regard as a definite part of its reserve not only oil aboveground but also the shut-in production in competitive areas.

"The traditional policy of the Standard Oil Co. (New Jersey) has been to build up out of earnings a substantial reserve for the purpose of expanding its operations and strengthening its position. The result of this policy today is that the company's cash resources enable it to face the future with confidence."

Burmah Oil

Preliminary statement of the Burmah Oil Co., Ltd., for year ended December 31, 1930, shows profit of £2,736,013 after income taxes, directors' fees, contributions to employes' fund and depreciation, comparing with £3,437,472 in 1929. The company declared a final dividend of 12½ per cent on the common stock, making 22½ per cent for the year, compared with 30 per cent in 1929.

Prairie Oil & Gas

Prairie Oil & Gas Co. has omitted the quarterly dividend of 50 cents due at this time.

Prairie Pipe Line

Prairie Pipe Line Co. and subsidiary reports for quarter ended March 31, 1931, net profit of $1,892,700 after taxes and charges, equal to 47 cents a share (par 25) on 4,050,000 shares of stock. This compares with $5,222,000 or $1.29 a share in first quarter of 1930. The usual dividend 75 cents, was declared.

Royal Dutch Petroleum

The Royal Dutch Petroleum Co. of Holland declared a final dividend of 7 per cent for the year of 1930, as compared with one of 14 per cent for 1929. This makes total disbursements 17 per cent compared with 24 per cent for 1929.

Brit'sh American Oil

British American Oil Co., Ltd., has declared the regular quarterly dividend of 20 cents, payable July 2 to stockholders of record June 13.

Wilcox Oil & Gas

H. F. Wilcox Oil & Gas Co. reports a net loss of $175,475.79 in the first quarter of 1931, although income for the period totaled $1,112,449.07.

Operating income from crude oil production and its refining and marketing division amounted to $1,084,235.25, while other income from rents, etc., totaled $28,213.82.

Operating expenses in all divisions were $858,643.83 and general and administrative expenses $85,949.40, leaving a net operating profit of $167,855.84.

Property abandonments it lists at $44,578.68; interest charges at $41,038.56; bond discount and stock selling expense amoritized at $13,836.85 and miscellaneous, $18,252.49. Profits before providing $225,625.05 for depletion and depreciation were $50,149.26.

Atlantic Refining

Atlantic Refining Co. declared the regular quarterly dividend of 25 cents, payable June 15 to stock of record May 21.

Simms Petroleum

Simms Petroleum Co. and subsidiaries report for quarter ended March 31, 1931, net loss of $396,376 after interest, taxes, drilling costs, depreciation, depletion, etc., comparing with net loss of $37,554 in first quarter of 1930.

Penn-Mex Fuel

Penn-Mex Fuel Co. (controlled by South Penn Oil Co.) reports for year ended December 31, 1930, net profit of $845,308 after expenses, depreciation, depletion, taxes, etc., equivalent to $2.11 a share (par $25) on 400,000 shares of stock. This compares with $283,510 or 71 cents a share in 1929.

Northern Pipe Line

Northern Pipe Line Co. has declared a dividend of $1.50 and an extra dividend, out of nonrecurring income, of 50 cents, both payable July 1 to stock of record June 12. Dividends previously have been $2 semiannually, the last previous payment being made January 2.

Barnsdall Corp.

Barnsdall Corp. and subsidiaries report for quarter ended March 31, 1931, net profit of $1,658 after interest, federal taxes, depreciation, depletion and intangible development costs, equal to less than 1 cent a share (par $25) on 2,258,779 combined Class A and Class B shares. This compares with $1,420,595 or 63 cents a share on 2,258,317 combined shares in first quarter of 1930.

Consolidated income account for quarter ended March 31, 1931, compares as follows:

	1931	1930
Profit after interest and federal taxes	$1,066,270	$2,781,951
Depreciation and depletion*	1,064,612	1,361,356
Net profit	$1,658	$1,420,595
Dividends	549,493	1,108,254
Deficit	$547,835	†$312,341
	1929	1928
Profit after interest and federal taxes	$3,379,605	$1,921,936
Depreciation and depletion*	1,491,233	1,532,805
Net profits	$1,888,372	$389,131
Dividends	911,233	.....
Deficit	†$977,139	†$389,131

*Includes intangible development costs, abandonments, etc. †Surplus.

With regard to the quarterly dividend of 25 cents paid May 11, E. B. Reeser, president of Barnsdall Corp., stated that directors, while recognizing that earnings were not on a parity with 1930, "felt that stockholders were entitled to receive a dividend at this time by reason of the amounts which the corporation from time to time has set aside out of earnings for depletion and depreciation and, in addition, to the fact that many valuable properties have not been included in the book value of the corporation's stock.

"The management feels," Mr. Reeser says, "that while the industry is depressed at this time, constructive measures which are being undertaken will, in the near future, have a stabilizing effect which will be reflected in the earnings of the corporation. Nevertheless, the corporation is, by reason of its ample reserves out of earnings for depletion and depreciation, adding to its cash funds and the corporation is in a satisfactory current condition."

Valvoline Oil

Valvoline Oil Co. declared the regular quarterly dividend of $1.50 on the common, payable June 17 to stock of record June 13, and $2 on the preferred, payable July 1 to stock of record June 18.

The Texas Corporation

The Texas Corporation declared quarterly dividend of 50 cents, payable July 1, to holders of record June 5. This places stock on $2 annual basis against $3 previously.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Wednesday, was as follows:

Sept. 24	40.62	Jan. 21	27.55
Oct. 1	37.78	Jan. 28	27.26
Oct. 8	35.85	Feb. 4	27.26
Oct. 15	35.21	Feb. 11	26.76
Oct. 22	31.85	Feb. 18	26.53
Oct. 29	32.80	Feb. 25	29.33
Nov. 5	31.77	Mar. 4	27.67
Nov. 12	30.18	Mar. 11	26.53
Nov. 19	31.54	Mar. 18	26.78
Nov. 26	30.86	Mar. 25	26.35
Dec. 3	30.53	Apr. 1	24.80
Dec. 10	28.57	Apr. 8	25.52
Dec. 17	25.42	Apr. 15	24.72
Dec. 24	25.68	Apr. 22	22.73
Dec. 31	26.15	Apr. 29	20.54
Jan. 7	27.56	May 6	20.74
Jan. 14	27.31	May 13	20.38

OFFICERS OF NATIONAL OIL SCOUTS ASSOCIATION

Reading from left to right, C. A. Strahan, chairman executive committee; Tom Terry, first vice president; J. H. Langston, president; L. S. McGee, second vice president; J. W. Selby, secretary and treasurer of the National Oil Scouts Association, recently elected to serve one year.

COMPLETE SMITHVILLE PROJECT

HOUSTON, Tex., May 18.—United Pipe Line Corp., a part of the United Gas System, the past week completed the final connection of what is known as its Smithville project, adding approximately 110 miles of pipe line to its system and serving the principal municipalities in Travis, Bastrop, Lee, Fayette and Lavaca Counties.

The new system extends from a connection at Buda Station on the San Antonio-Austin trunk line. The pipe ranges from 12-inch down to 4-inch. The cities, in which gas was turned on include Schulenburg, Weimar, Halletsville, Smithville, La Grange and Buda. One of the largest connections was the Butler brick works, to which 8 miles of 6-inch branch line was laid from the main line.

STEADY BUYING CAUSES NATURAL GASOLINE RISE

(Continued from Page 30)

securing the high gravity and more volatile motor fuels required by foreign consumers. Over the past two years, there has also been a substantial outlet developed for the so-called superstabilized natural gasolines which are shipped direct to foreign buyers without blending.

The chaotic condition of export markets generally over the past few months has resulted in a 50 per cent decrease in movement of all grades of gasoline with prices at coastal points with which interior refiners have been unable to compete. One reflection of this development was the change from buyers to sellers on the part of several major companies. Under normal conditions concerns like the Gulf, Shell, Standard of New Jersey, Humble, Texas and Sinclair are either buyers of natural gasoline for shipment to their coastal refineries and terminals or at least absorb their own natural gasoline production including that of subsidiary companies. Since the first of the year some of these companies have stopped buying except where they are obligated by long-time contracts and have been active in the selling end of the business contributing materially to the rapid decline in prices.

It is understood that some of the companies have realized the market significance of this reversal in position not only from the standpoint of natural gasoline but also for the motor fuel market generally and will shortly withdraw their production from the open market. It is also hoped that the export situation will improve to the point where there will be a better demand for the export grades of natural at prices more in line with the cost of production at Mid-Continent plants.

Gasoline and Naphtha

Predictions that U. S. Motor gasoline would advance to a low of 3 cents have not yet materialized. Price ranges on all grades are practically the same as last week. Several of the larger refiners in the State are not selling in the spot market, their own stations and regular jobber contracts taking their output. As explained by one operator who tried it, reducing the price did not improve the movement, his prices always being shaded by a few refiners who have made a practice of quoting the low of the market. Several refiners have materially increased sales through their own stations due to price reduction in retail operations and this has offset the declines in tank car sales.

There is some gasoline being sold which does not meet U. S. Motor specifications. It is claimed in some cases that it is being sold as specification material and due to that fact it tends to hold down prices on the regular grades. Usually this low-priced material is being "packed" to the limit with natural gasoline being a blend with a heavy naphtha.

The 60-62 400 endpoint was available from several sources at 3 and 3⅛ cents with several refiners quoting 3¼ cents. Prices on 64-66 375 ranged up from 3⅜ cents.

A Tulsa broker representing independent foreign buyers was reported to be making inquiries for 375 endpoint material. The same broker bought the natural gasoline previously mentioned. Based on present export prices at the Gulf Coast it does not appear that export buyers could pay more than 2½ cents f.o.b. Oklahoma for 375 gasoline.

Kerosene

The kerosene market was more active the past week. The demand came from domestic sources and reflected a better consumption. Specification 41-43 water white material which sold as low as 2¼ cents last week was no longer available under 2⅜ cents the first of the week and several refiners reported an improved movement at 2½ and 2⅝ cents. The higher gravities were also in demand at a low of 2⅝ cents for 44 gravity material.

Fuels

It continues to be a buyers' market in all grades of fuels.

Refiners who have heavy fuels to sell have found practically no spot demand. The industrial buyers, most of which are only purchasing a small fraction of their normal requirements, in most cases have contracts with refiners. Prices quoted in Oklahoma last week ranged from 25 cents for the 60 to 80 cold test grades available from Oklahoma City skimming plants to 60 cents for the high gravity low cold test grades. The movement was slow on all grades.

With U.G.I. and high cold test grades of gas oil quoted as low as three-quarters of a cent per gallon in competitive areas, the grades were available in Oklahoma at seven-eighths of a cent. One sale at 35 cents per barrel was reported. Part of the decline in the gas oil demand is seasonal, this being particularly true in the case of the requirements of the artificial gas industry. The fact that the heavier grades of fuel oil are being used in the manufacture of artificial gas has also tended to reduce the demand. It is too early for buyers to be interested in furnace oils for storage and trading is very little in all grades from the 32-36 light low cold test gas oils to the distillates up to 40 prime white. Prices range from 1¼ to 1¾ cents.

Lubricants and Wax

Steam refined stocks, bright stocks and neutral oils were steady following the price declines of last week. It is not anticipated that the lower prices will stimulate the demand although some of the larger manufacturers are now in a position to meet competition.

Prices have been reduced in the compounded motor oils in line with the cheaper oils and stocks. Due to these cheaper prices there is a tendency to reduce quotations in the retail end. Several large and small distributors have reduced retail prices from 30 to 25 cents per quart.

Untreated steam refined stocks depending on grade are quoted from 3 to 5 cents. Bright stocks are available from 13½ to 18 cents. The 150-160 D low cold test bright stock which is the most popular grade, is quoted at 14½ to 15½ cents.

Export buyers are not interested in immediate shipment of wax so the inquiries and purchases of this product are confined to the domestic market. Quotations on the 124-126 grade range from 1¾ to 2 cents.

BIG PART OF GAS BILL REPRESENTS STATE TAX

(Continued from Page 35)

Arkansas Natural Gas Corp. described the advantages of a uniform classification of accounts. Methods of detecting and preventing leakages in distribution systems were discussed by J. A. Martin and L. B. Denning, Jr., of the Lone Star Gas Co.

In his paper on "Modernism in Distribution Design and Operation," G. J. Heckendorn, assistant engineer of gas distribution for the Public Service Co. of Colorado, Denver, Colo., said: "Only a few years ago pressures of 100 or 200 pounds per square inch were considered high for gas transmission lines. Today a line which will carry 800 pounds per square inch is nearing completion. Just what pressure may finally be reached it is not safe to predict, but it is certain that pressures which now seem high will some day be commonplace. This revolution has been brought about by the economic problem presented in supplying large markets at a great distance from natural gas fields and by the acceptance of a responsibility by operators formerly considered impractical."

Drilling and Production Symposiums

Wednesday morning was given over to a drilling symposium. Three speakers presented a discussion of drilling practices and problems, each from his own region, and the papers were followed by general discussion. The papers were by J. French Robinson, Hope Natural Gas Co., Pittsburgh, Pa., for the East; B. M. Nowery, United Gas Public Service Co., Houston, Tex., for the Mid-Continent, and L. M. Spencer, Southern California Gas Co., Los Angeles, for the Pacific Coast. A production symposium along the same lines was held Thursday morning. The papers for this discussion were prepared by S. W. Meals, Carnegie Natural Gas Co., Pittsburgh, Pa., for the East; R. M. Stuntz, Cities Service Gas Co., Bartlesville, Okla., for the Mid-Continent, and William Moeller, Jr., Southern California Gas Co., Los Angeles, for the Pacific Coast.

Other important technical papers included: "Gas Well Deliveries," E. L. Rawlins, United States Bureau of Mines, Bartlesville, Okla.; "Gas Makes Its Entry Into House-Cooling and Air-Conditioning Field," E. D. Milener, American Gas Association, New York; "Pipe Line Flow," W. B. Berwald, United States Bureau of Mines, Bartlesville; "Selling Natural Gas," B. H. Gardner, Columbia Gas & Electric Corp., Columbus, Ohio; "Gas Measurement," H. S. Beam, United States Bureau of Standards, Washington, D. C.; "Compression and Transmission of Natural Gas," P. McDonald Biddison, Southern Natural Gas Corp., Birmingham, Ala.; "Origin of Dust and Its Elimination," D. A. Sillers, Lone Star Gas Co., Dallas, Tex.; "Field Testing of Large Positive Meters," John C. Diehl, Metric Metal Works, Erie, Pa.

Plans for Education

The committee on natural gas fellowships, of which John B. Tonkin, Peoples Natural Gas Co., Pittsburgh, Pa., is chairman, reported the results of its investigation into the question of using to the best advantage a fund of $27,000 placed in the hands of the natural gas department to provide aid for young men desiring to complete courses in gas engineering, but hampered by want of funds.

"While we are of the opinion that the greatest good can be accomplished by graduate aid through research fellowships, it may be necessary to give assistance to worthy juniors and seniors which will help them to graduate from the regular engineering courses and then to undertake the special research work," says the report. "In order to obtain the greatest and most effective results we have agreed that the distribution of our funds should be limited to two schools, preferably representing two distinct sections of the country."

The University of Oklahoma was selected to represent the western territory and the University of West Virginia to represent the eastern region. The method of extending aid to students will be determined by consultation between university officials and the committee.

Gulf Coast Operators Ask Delay in Cutting Crude Production

HOUSTON, Tex., May 19.—A recommendation that the State Railroad Commission delay issuing any proration order affecting the Gulf Coast fields for a period of 30 days was made by the coastal proration advisory committee at the offices of the United Gas Co. here.

It was the decision of the committee that the restriction of present production by proration would be inadvisable, but that within a period of a month further curtailment of development would be effected which would result in lowering coastal production to within the allowable of 140,000 bbls. as set by the commission. It has been under this plan that coastal production under previous proration allowances has been reduced satisfactorily.

Present coastal production is approximately 18,000 bbls. above the allowable figure but the two largest fields apparently have reached a peak of development and it is probable that these will feel a sharp let-up in operations from now on and that their production declines will be sufficient to lower coastal production to meet the requirements.

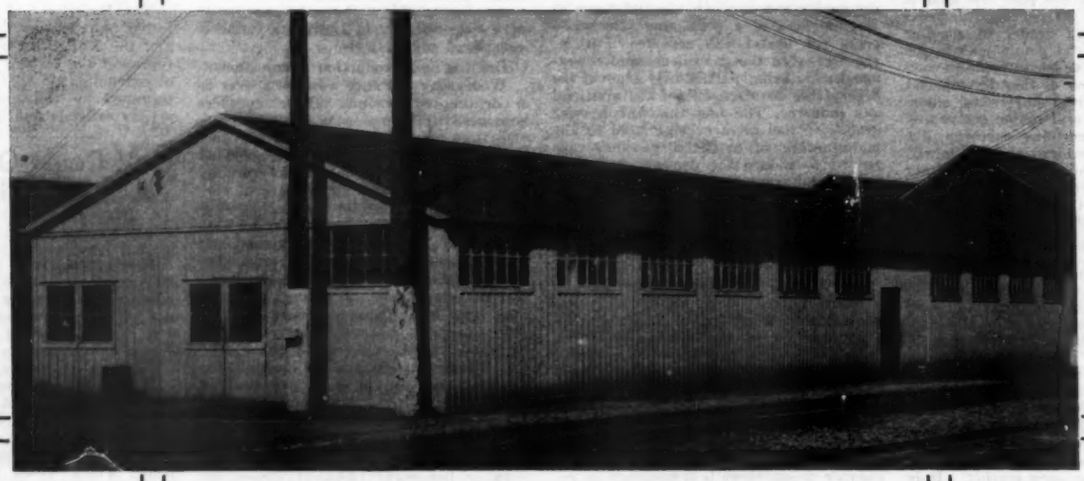
GOVERNOR SUES GAS COMPANIES

The Oklahoma State Supreme Court has been asked in a petition filed by Leon S. Hirsh, special counsel for Governor Murray, to take original jurisdiction in a suit asking for forfeiture of state holdings of 10 natural gas utility companies and to prevent continued operation of the companies within Oklahoma.

Governor Murray is listed as plaintiff in the suit filed against the Oklahoma Natural Gas Corp., Southwestern Natural Gas Co., Quinton Natural Gas Co., Muskogee Natural Gas, Inc., Texokan Oil Co., Ozark Holding Co., American Natural Gas Corp. and Tri-Utilities Corp.

EXECUTIVE BOARD AMERICAN GAS ASSOCIATION

Seated, left to right: A. B. Macbeth, president, Southern California Gas Co., Los Angeles, Calif.; O. H. Fogg, vice president, Consolidated Gas Co. of New York, New York; R. W. Gallagher, president, East Ohio Gas Co., Cleveland, Ohio; C. E. Paige, vice president, Brooklyn Union Gas Co., Brooklyn, N. Y.; Arthur Hewitt, vice president, Consumers Gas Co., Toronto, Canada; H. C. Abell, vice president, Electric Bond & Share Co., New York; and B. J. Mullaney, vice president, Peoples Gas Light & Coke Co. Standing, left to right: Kurwin R. Boyes, secretary, American Gas Association, New York; Arthur Stockstrom, secretary, American Stove Co., St. Louis, Mo.; F. A. Lemke, Humphrey Co., Kalamazoo, Mich.; E. S. Dickey, manager, Maryland Meter Works, Baltimore, Md.; W. C. Beckford, vice president, Boston Consolidated Gas Co., Boston, Mass.; F. A. Miller, chairman of board, S. R. Dresser Manufacturing Co., Bradford, Pa.; J. S. DeHart, Jr., president, Isbell-Porter Co., Newark, N. J.; R. G. Griswold, chief technologist, Henry L. Doherty & Co., New York; and Alexander Forward, managing director, American Gas Association, New York.



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In appearance and serviceability, an IDECO Standardized Steel Frame Building makes a unit of which no industrial business house need be in any way ashamed.

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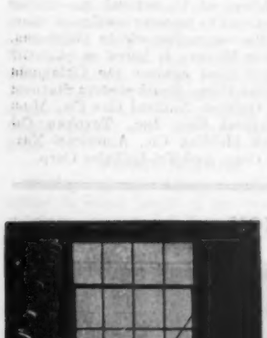
An exclusive feature of IDECO buildings is their complete protection against rust and corrosion—frames, sash, sheeting and hardware are hot dip galvanized.

IDECO buildings are offered in any size and with eight styles of roofs to fit any need. Standardization of parts makes the cost attractive. Easy to erect, permanent in construction, they are the most economical of all steel buildings.



IDECO insulated buildings offer the same protection as a structure built of 13" brick or 20" concrete wall. Moreover, the method of applying this insulation retains the sectional feature.

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NATURAL GASOLINE MANUFACTURERS MEET

(Continued from Page 31)

ing price of their own product, and plant operation flexibility to allow the buyer a maximum of delivery time convenience.

"As the fiscal year closes the committee has given over its last meetings to an effort toward the further development of trade using a maximum percentage of naturals in an intelligent blend for distribution direct to the trade from bulk centers, thus eliminating freight costs from gasoline plant to refinery. Such business seems to hold the greater promise in the future. Freight rates now exceed the cost of the naturals. Whereas 2 cents per gallon freight amounted to about 40 per cent of a 5-cent sale price, it now amounts to about 125 per cent of the current price. Transportation costs to the refinery and freight on the blended product affect our net back in direct relation to the motor price."

Wednesday Meetings

The Wednesday morning discussion of new developments in plant equipment was one of the features of the meeting and the paper read by G. M. Davidson of the Empire Oil & Refining Co. included a summary of trend. This paper appears elsewhere in this issue of The Oil and Gas Journal.

LONE STAR TAKES OVER FORT WORTH GAS CO.

FORT WORTH, Tex., May 18.—The Fort Worth Gas Co. has been purchased by the Lone Star Gas Co. The transfer was effected Saturday. Announcement of the purchase was made in a statement prepared by L. B. Denning, Dallas, president of the Lone Star, and issued by W. F. Wright, manager of the Fort Worth company.

The purchase will not affect the city government's plan to operate a municipally owned gas distribution plant, it was said at the city hall.

Operation of the distribution plant will continue under the name of the Lone Star Gas Co., with Ellison Harding, president of the Fort Worth National Bank, and Ben E. Keith, produce dealer, as members of the board of directors.

The statement issued by Mr. Denning said: "All matters relating to city gate contracts and city gate rates are thereby eliminated."

The long drawn out fight between the city and the Fort Worth Gas Co. for lower gas rates has been centered about the gate rate contract between the Lone Star company and the distributing company, which recently was reduced to 40 cents per 1,000 feet. The domestic rate, now under fire of the city council, with plans for municipal ownership to be voted on soon is $1.25 for the first 1,000 feet, with 67½ cents net for additional 1,000 feet.

The entire operating personnel of the local company will be absorbed by the Lone Star Co. and will continue in the operations of the local plant. O. K. Shannon, president, and C. K. Fletcher, secretary-treasurer of the Fort Worth company, will become executives of the Lone Star, the statement said. Mr. Wright becomes divisional manager in charge of operations at Fort Worth.

JOINER YIELDS 75 PER CENT GASOLINE

(Continued from Page 40)

PROPERTIES OF PRODUCTS AND YIELDS FROM JOINER CRUDE

Product—	Straightrun gasolines		Kerosene	Light gas oil	Fuel oil
A.P.I. grav.	62.3	63.5	42.8	39.0	24.0
Flashpoint, °F.	....	....	....	205	280
Firepoint, °F.	....	....	....	220	330
Cold test, °F.	....	....	....	....	56
Color	30	30	24	....	....
Init. b.p., °F.	84	92	374	440	520
Per cent at 140° F.	8	9	....	....	....
Per cent at 221° F.	38	41	....	....	....
Per cent at 284° F.	68	70	....	....	....
Per cent at 350° F.	88	89	....	....	....
Per cent at 374° F.	93	94	....	....	....
Per cent at 400° F.	95	95	20	....	....
Per cent at 437° F.	....	....	81	....	....
Per cent at 460° F.	....	....	96	4	....
Per cent at 500° F.	....	....	99	28	....
Per cent at 560° F.	....	....	....	64	5
Per cent at 600° F.	....	....	....	82	11
Endpoint, °F.	408	400	500	....	698
Octane No.	64+	65			
Ethyl fluid c.c.'s*	1.3	1.2			

*Lead tetraethyl to bring gasoline to Ethyl standard of 74 octane number.

GULF COAST REFINED MARKETS ARE WEAKER

HOUSTON, Tex., May 18.—Further slipping of coastal refinery markets was indicated the past week, which was reflected in slightly lower gasoline and gas oil prices and a weaker tone in other products, including lubricating oils. Due to the lack of trading, however, all prices were more or less nominal and it was difficult to determine a true market as it might have been possible for buyers with bona fide orders to shade quoted figures.

Gas oil was quoted Monday and Tuesday at a quarter cent under previously prevailing markets and was available at 2¾ cents. This market, however, slipped more in sympathy with general conditions, as there is not a great amount of gas oil being made for the open market and what material is offered is controlled by a few sources of supply.

Spot gasolines were easily available for the asking at 4½ cents. The slipping of North Texas markets to 2⅞ cents has placed Gulf Coast contract material at 4⅛ cents and this bearish influence has forced the open market downward. Export prices range from 4¼ to 5½ cents, but little business is being done.

Bulk fuels continued to be held from 60 to 62½ cents. Certain refiners, however, have been fortunate in having contracted their output recently at a flat price of 65 cents before the market slipped to its present figure.

Bunkers also are fairly steady at the posted price of 80 cents following this market's recent drop from 90 cents. The competitive situation which resulted in the cut still is in force but so far as prices are concerned little effort is being made to sell under the posted figure. This cut also had been anticipated by some sellers who now have their output contracted at 82½ cents.

Pale and red oils continued extremely uncertain. A half-cent reduction the previous week has not resulted in any material new business and while the general cut cleared up some price cutting, the situation is unsettled.

HWW "Hy Pressure" WELD

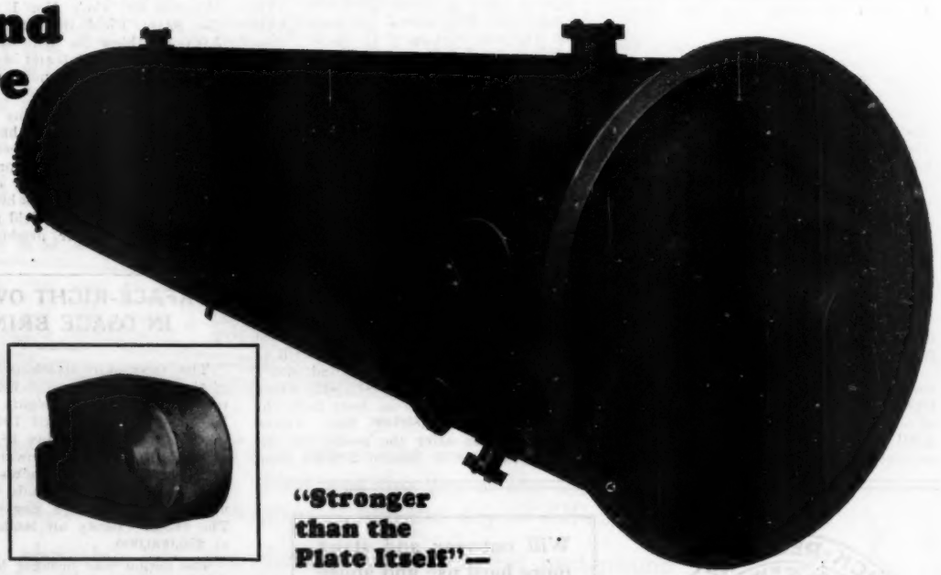
for Absorbers and all High Pressure Vessels—

H W W "Hy-Pressure" Weld is the most advanced step in fusion welding. It imparts to welds a greater strength than here-to-fore possible—a more perfect fusion that shows no marked line of junction—creates a union wherein the deposited metal, "purer than the plate", has a higher resistance to corrosion than the plate itself.

This new "Hy-Pressure" weld is but one of the many modern advancements in shop methods to be found in the vast "H W W" plants.

Largest *plate bending press* in this country and other equipment with the facilities for the manufacture of pressure vessels of any style, size or capacity and from any plate up to 3" thick either riveted or welded construction.

Make this modern "H W W" plant your source of supply—submit your plans or ask for "H W W" engineering co-operation.



"Stronger than the Plate Itself"—

The small section shows one of the hundreds of H W W "Hy-Pressure" Weld tests. These tests have demonstrated a ductile weld stronger than the plate itself—note how perfect the weld blends with plate.

The HEDGES-WALSH-WEIDNER Company

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Texas Commissioners Want More Authority To Enforce Proration

AUSTIN, Tex., May 19.—Two members of the Railroad Commission today wrote to Governor Ross S. Sterling a protest that injunction suits are preventing the enforcement of oil proration in East Texas and made an appeal for legislation similar to the pending Howsley proration bill, giving the commission more authority and speeding settlement of litigation. Commissioner Pat M. Neff did not sign the letter.

Late Fields

(Continued from Page 42)

salt water production was not only a disappointment but a surprise.

L. L. Smith's (Mission Drilling Co.) No. 1 Hunter in the Saxet Field has a sand at 3,150 feet which looks like production. This is the second well in a week to get a good showing in sand at that depth, the other being the Gulf Coast Oil Co.'s No. 1 Maggie Harrell, which had a showing at 3,173 feet. It looks like it might be something new in that field which already has eight sands but no producers at the 3,150-73-foot horison, unless one of these should be completed there.

OKLAHOMA

The deepest drilling test in Oklahoma was drilling at 7,321 feet. Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Corp.'s No. 6 Preston-Culp, NW cor. NE NE, Section 6-5-9w, in the Cement Pool, in Caddo County, cored sandy shale at 7,303-07 feet. A showing of oil and gas was found in the test at 7,212-15 feet. The test is located on the west side of the pool.

Magnolia Petroleum Co.'s No. 2 Estes, SE cor. SW NE, Section 10-5-9w, in the Cement Pool, was drilling at 4,285 feet in sandy shale with nothing showing.

G. E. Burgher Oil Co.'s No. 1 Dobbs, SW cor. SE SE, Section 18-9-5, is a new location southwest of the Earlsboro Townsite Pool, in Pottawatomie County. It will be a Wilcox sand test surrounded by wells producing from the Hunton lime.

A. J. Diffie and Pace Petroleum Co.'s No. 1 Caesar, SE cor. NE SE, Section 29-6-6, Seminole County, which may extend the production in the Konawa Pool south, was drilling cement plugs after finding a showing of oil at 2,543 feet. The test is one location north of a dry hole completed by the Magnolia Petroleum Co. in the NW cor. SW SE of the same section.

Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Co.'s No. 1 Heitholt, NW cor. SE SE, Section 33-24-3w, a wildcat in Garfield County, was shot with 100 quarts at 4,780-4,850 feet and was cleaning out. Before the shot the test showed 15 bbls. of oil and 5 bbls. of water a day after being plugged back from 5,092 feet.

Courter Oil Co.'s No. 1 White, NW cor. SW NW, Section 10-11-3w, in the Oklahoma City Field, flowed 902 bbls. of oil in one hour and eight minutes and 2,291 bbls. in three hours. The gas was estimated at 18,000,000 feet a day. The Wilcox sand was found at 6,417-6,500 feet.

Indian Territory Illuminating Oil Co.'s No. 6 M.K.T., NW cor. SW SW, Section 35-12-3w, in the northern part of the Oklahoma City Field, flowed 258 bbls. of oil in 50 minutes and was shut down when it began to cut the connection. Gas was estimated at 28,000,000 feet a day. The well is producing from the Wilcox sand at 6,275-6,392 feet.

Don Leon Oil Co.'s No. 1 Burt, SW cor. NW NW, Section 10-11-3w, was flowing into the slush pits and no gauge was taken of the production. The oil was found in the Wilcox sand at 6,375-6,537 feet.

Wilcox Oil & Gas Co., Anderson and Kerr's No. 1 James, SW cor. NW NW, Section 10-11-3w, flowed 252 bbls. of oil in 15 minutes and was shut in from the Wilcox sand at 6,440-6,530 feet. The connections were being cut away when the well was shut in.

Simmons and Maginnis' No. 1 in the N half SE NW NW, Section 10-11-3w, made 420 bbls. of oil in 15 minutes with 20,000,000 feet of gas a day from the Wilcox sand at 6,380-6,539 feet.

KANSAS

Another wildcat test in Russell County, Kansas, found a showing of oil and was shut in without making a production test. Gilbreath and others' No. 1 Bratton, C NE Section 33-11-13w, a wildcat 5 miles east and 12 miles north of Russell, found a showing of oil at 3,090-94 feet, and was shut down.

The other Russell County wildcat test to find oil during the week was drilling deeper. Stearns-Streeter Co. and Hall's No. 1 Miller, SW cor. SE SE, which swabbed 4 bbls. of oil an hour from the Oswald lime at 2,804-06 feet, started drilling deeper after the production declined. The test is located 2 miles from production in the Ochs Pool, where production is curtailed to 50 bbls. a day per well.

Stanolind Oil & Gas Co. and Amerada Petroleum Corp.'s No. 1 Martin, NE cor. SE Section 3-16-3, a wildcat in Saline County, was drilling in the Mississippi lime at 2,975 feet. The test found a hole full of water at 2,865-2,905 feet.

Muth Brothers' No. 1 Freeman, SE cor. Section 4-21-6w, an extension well in the Welch Pool, in southeastern Rice County, made 400 bbls. of water and 20 bbls. of oil in 24 hours from the chat at 3,430-60 feet. The well extends production about a half mile south.

DRAKE WELL MEMORIAL CONTRIBUTIONS WELCOMED

Contributions to the fund being raised to establish a park at the site of the Drake well near Titusville, Pa., have not been sufficient thus far to meet the expenses involved. Contributions of any amount may be sent to W. R. Boyd, Jr., chairman of the committee in charge of the project, who says the aid thus given will go far to lighten the load on the shoulders of the men who have assumed the responsibility of completing the undertaking. The accompanying subscription blank may be used.

DRAKE WELL MEMORIAL PARK FUND

....., 1931

I hereby subscribe $..... toward the fund for preservation of the Drake well site, to be paid on ....., 1931, and ....., 1931.

Cash herewith, $.....

Signature .....

Address .....

.....

Fill out and mail to W. R. Boyd, Jr., American Petroleum Institute, 250 Park Ave., New York, N. Y. Make checks payable to "Drake Well Memorial Park Fund."

WILD WELL IN SAXET FIELD

SAN ANTONIO, Tex., May 19.—Houston Oil Co.'s No. 1 Lawrence in the Saxet Field in Nueces County at 3,000 feet blew the drill stem out of the hole, wrecked derrick and is running wild. This is a new sand not found in other tests in the field.

Humble Oil & Refining Co.'s No. 5 Kohler in Duval County has set and cemented casing at 6,020 feet with showing of oil and has taken precautions indicating that the company expects a big pressure when the well is brought in. It is the first test in the field to reach that depth. The regular producing sand is at 1,800 feet.

SURFACE-RIGHT OWNER IN OSAGE BRINGS SUIT

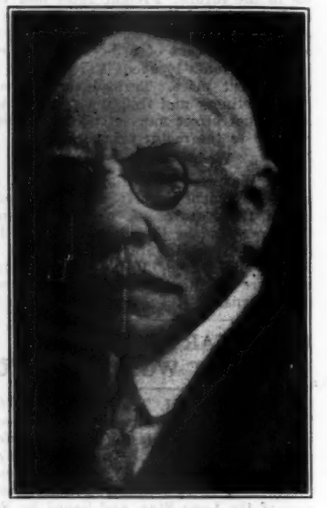
The first suit attacking the validity of the act of Congress of 1921 which extended the oil and gas rights of the Osage Nation from 1931 until 1946 was filed in the federal court May 18. The result of this suit affects the ownership of approximately 250,000 acres of Osage County oil producing lands and approximately 32,000 bbls. a day of crude oil. The Osage County oil lands are valued at $50,000,000.

The action was brought by Henry R. Adams, of Hominy, owner of approximately 2,000 acres of surface-right lands, who named as defendants the Osage tribal government; Ray Lyman Wilbur, Secretary of Interior; Charles J. Rhodes, commissioner of Indian Affairs; D. E. Murphy, superintendent of the Osage Indian Agency, and Fred Lookout, chief of the Osage tribe.

The action was brought to determine the status of all non-citizens of the tribe who have purchased surface lands from unrestricted members of the Osage tribe prior to March, 1921.

E. W. Clark's Death Ended a Varied and Busy Career in West

LOS ANGELES, Calif., May 16.—E. W. Clark, chairman of the board of directors of the Union Oil Co., who died in the office of his physician on Tuesday afternoon, was one of the best known and best beloved men in the petroleum industry. He had been in poor health for a long time but was in good spirits and was talking and laughing with his medical adviser when without warning he sank down in death.



E. W. Clark

E. W. Clark was born in New Hampshire, July 24, 1857. While yet a boy he went to Nevada attracted there by the stories of wealth gained in the gold fields. For 12 years he was active in mining operations and then he moved to the Northwest, which was being opened to settlement and began railroading. From 1888 to 1897 he was with the Northern Pacific and the Great Northern Railroads, during the great westward extension of both lines. Going farther west he went with the Pacific Coast Railroad.

In 1910 he was made manager of the Producers Transportation Co. and in 1914 was elected a director in the Union Oil Co. In 1916 he became executive vice president. In 1929 he retired from active service with the company, but was prevailed upon to return and was made chairman of the board.

E. W. Clark served two terms as president of the American Petroleum Institute. He wanted to retire at the close of his first year, but was given a leave of absence by the Union Oil Co. so that he could devote more time to the Institute, and he then consented to his election for the second term.

Final Court Upholds Hoover's Oil Policy On Government Lands

WASHINGTON, D. C., May 19.—A new era for the West, with the idea of conservation dominant, was visioned today by Secretary Wilbur as a result of a clearcut supreme court decision.

The decision supports the executive order of March, 1929, under which public oil lands were withdrawn from further exploitation, halting new drilling for a commodity already so vastly overproduced that the petroleum industry of the entire world is sick.

The oil ruling was one of the first executive acts of the Hoover administration.

By Monday's decision, Wilbur looks to the law now as a conservation statute as well as one for exploitation.

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When The Exchange National Bank of Tulsa came into existence the oil industry was struggling with difficulties now forgotten. That was the day of the lost hole, inadequate tools, impassable roads, the team and wagon . . . and the day of difficult financing.

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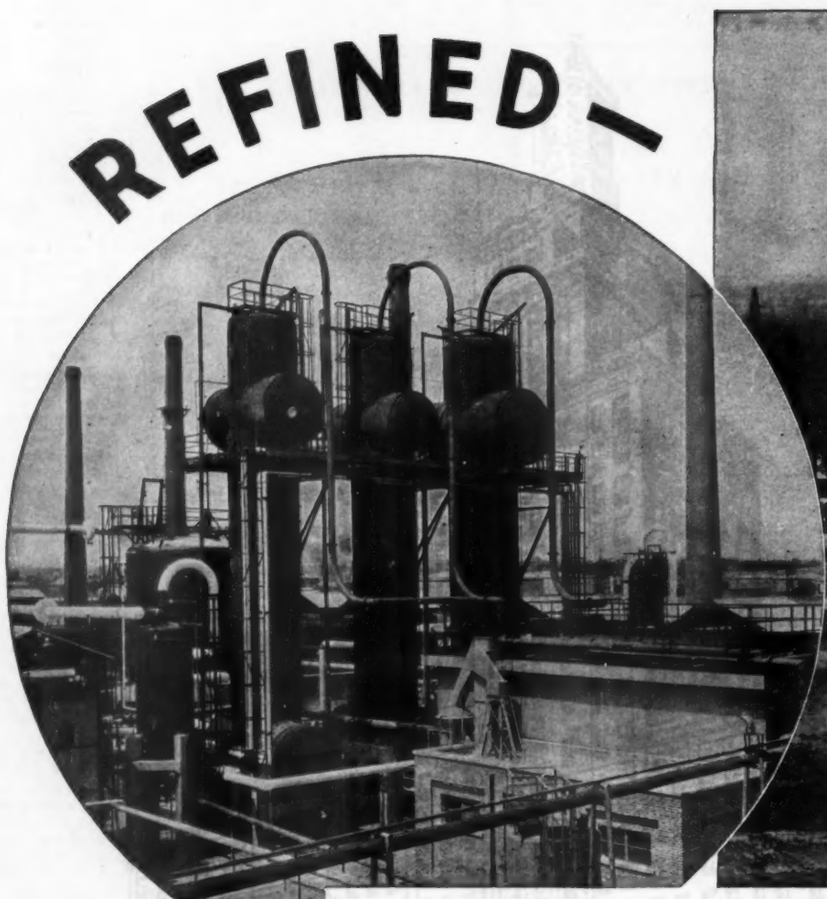

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EFFECT OF NEW GRADING ON PRODUCTION SHOWN

(Continued from Page 74)

in pentane ratio as may be deduced from a study of Figure 1.

This relatively constant volume loss of about 2 to 3 per cent per pound of vapor pressure change is an added reason to believe that the vapor pressure specification will be the major factor in establishing the price structure under the new grading system. Regardless of the raw material available, all manufacturers will have practically the same change in yields in passing from one vapor pressure limit to another.

Using average loss data from Figure 2, the last three columns of Table 1 have

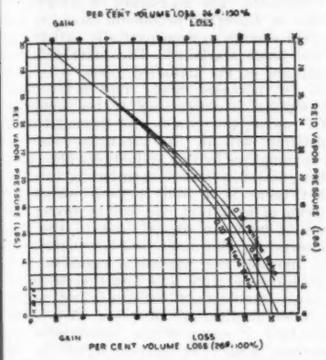


Figure 2—Volume loss vs. vapor pressure of propane free natural gasoline.

been prepared to show the price ratios necessary to equalize gasoline plant income at the several vapor pressure limits of the new grading system. These data of Table 1 and Figure 2 are based on the assumption that the gasolines are propane free and that no pentanes are lost. In actual practice this condition rarely exists, so that the loss and gain figures in the seventh column of Table 1 can be considered maximum figures. To show the opposite extreme, namely, where propane elimination is poor, the second to fourth columns of Table 1 are included. Obviously less volume loss will be encountered in reducing vapor pressure due to propane. Consequently, the lower vapor pressure grades can be sold at a lower relative price than where the vapor pressure adjustment is through control of the butane content only. Because loss of pentanes is usually a factor at plants where propane elimination is poor, the actual relative prices should never be as low as shown in Column 5 of Table 1.

The average values shown in the last column of Table 1 are fairly close to actual conditions as observed in the manufacture and sale of considerable quantities of natural gasolines of restricted butane content in the operations of the Phillips Petroleum Co.

When price ratios are expressed in terms of the 26-pound vapor pressure gasolines, the efficient operator is at a disadvantage in marketing natural gasolines of restricted butane content. For example, the operator with good propane removal is compelled to ask 1.258 times the going price for 26-pound natural, while the inefficient operator requires only 1.116 times this price for 18-pound natural. As a possible means of overcoming this difficulty the use of prices for 14-pound natural as the basis places the penalty for propane inclusion on the operator. Table 2 shows the relative prices on this basis. As an example, the efficient operator can sell 26-pound material for 0.735 times the going price for 14-pound natural while the inefficient operator must ask 0.827 times this base price.

The difficulty in the way of establishing such a viewpoint is that large quantities of 26-pound naturals can be sold at prices approximating U. S. Motor prices. The 14-pound natural must be sold at prices approximating 68-70 gasoline and consequently is moved in only small volumes. However, such a revision of viewpoint would materially assist both buyers and sellers of natural gasoline.

In changing from one grading system to another, the change in yields is a major consideration. It may be interesting to quote the conclusions in this connection made by the research department of our company. These conclusions were as follows:

1. Between 90 and 95 per cent of Phillips natural gasoline production has practically the same relationship to the new grading system.

2. This average relationship is such that practically all of our production will fall in seven of the new grades as follows: 38-70, 26-70, 22-25, 22-70, 18-55, 14-55 and 14-40. Grades 30-55, 26-55 and 18-40 should also be available in considerable quantities.

3. The plants producing gasolines abnormally low and high at 140 were ascertained.

4. In applying the new grading system to plant operation, the plants should use the vapor pressure limits of the new

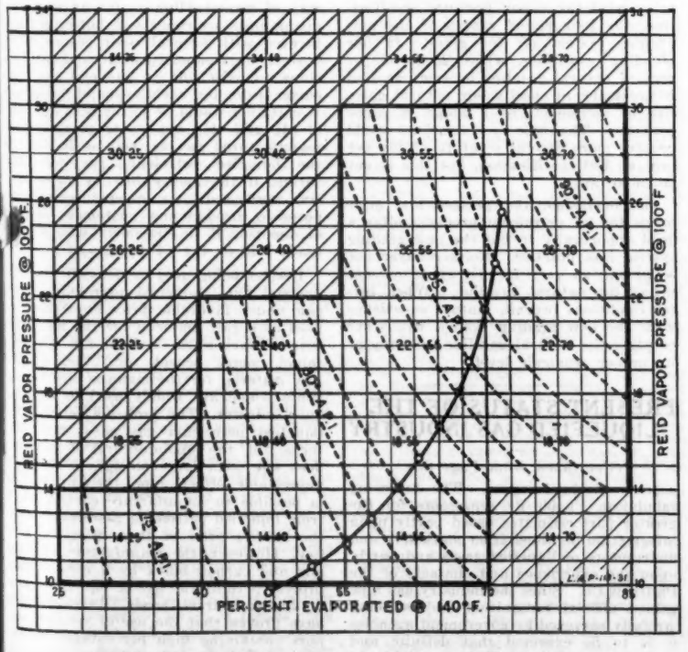
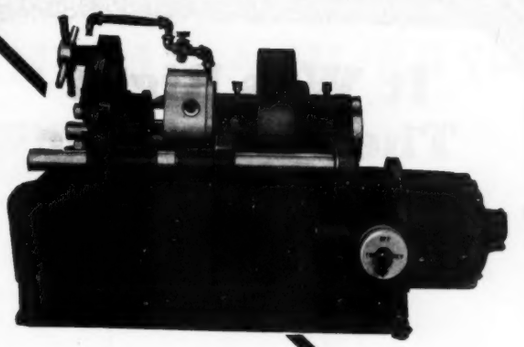


Figure 3—Relationship of gravity to the new grading system.



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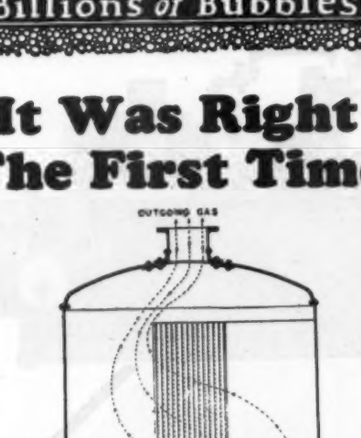

ONCE in a long while it happens that an inventor's first ideas regarding a given problem are the correct ones.

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grading system as the control characteristic. A given plant's product will change through several vapor pressure limits without changing through a 15 per cent range for the 140 point.

5. It is estimated that the vapor pressure limits of the new grading system could be applied to the Phillips plants with almost negligible production losses. At the most these losses could not exceed 4 per cent. If vapor pressure increases can be efficiently accomplished the losses would be practically nil.

6. Based on the price of 14-pound natural gasoline as unity the ratios of the prices of 30, 26, 22, 18, 14 and 10-pound naturals should be 0.658, 0.735, 0.829, 0.925, 1.000 and 1.081, respectively, to equalize income.

7. Based on the price of 26-pound propane-free natural as unity the ratios of the prices of 30, 26, 22, 18, 14 and 10-pound naturals should be 0.896, 1.000, 1.129, 1.258, 1.362 and 1.471, respectively, to equalize income.

To assist in the transition from the old to the new grading system, Figure 3 has been prepared. The solid curve is based on the actual shipments of natural gasoline from Phillips plants from October 25 to December 31, inclusive. Vapor pressure, distillation and gravity data of 5.325 tank cars are represented by this curve. The dotted curves were located by plotting the individual plant's average data for restricted vapor pressure intervals and sketching the probable gravity trends. The points so plotted are not shown in the figure as presented here. Due to variations in composition, deviations from the trends shown in Figure 3 of plus or minus 2° can be expected for products made at plants with reasonably efficient fractionating equipment. Greater negative differences can practically always be assumed to indicate excessive propane inclusion. Positive gravity differences, especially in the higher vapor pressure ranges, indicate the probability of superior propane elimination or unusually low iso-butane or iso-pentane contents. In considering Figure 2 it should be remembered that it is based on Mid-Continent gasolines. Gasolines from California and eastern fields would tend to have lower and higher gravities, respectively, particularly in the ranges of lower per cents at 140.

One important point in regard to the use of the new grading system which has not been stressed as much as it should is the fact that the grading system is designed for average blending conditions where approximately 15 per cent of natural is used. When larger proportions are used, particularly in blending closely to a resultant vapor pressure specification, the four pound ranges of the new grading system are too great. In our blending operations, where 25 to 55 per cent of natural gasoline is used, we find it necessary to specify our natural gasoline by increments of 1 pound in vapor pressure. The same considerations would require more careful scrutiny of the per cent at 140 specification, but this is not so important.

In conclusion, the present low price levels for all petroleum products offer a good opportunity to put the new grading system into practice. Neither buyer nor seller can go very far astray at present prices for natural gasoline. When better conditions prevail, mutual experience with the new grading system will serve to place the natural gasoline industry at its proper economic level.

PRESENT STATUS OF THE LIQUEFIED GAS INDUSTRY

(Continued from Page 68)

aspects of the business. The following tabulation (Table 3) represents for the greater part estimates based partly upon information obtained from marketers and distributors of liquefied gases and partly upon the experience and contacts of the Philfuels Co. Since the industry has now gained official recognition and is being carefully surveyed by government agencies it is to be expected that definite and authentic statistics will be available in the near future pertaining to these various phases of its activities.

Problems of Industry

From what has been said regarding the market possibilities for liquefied petroleum gas, you may all think that large and easy profits await the taking. Such is not the case. The liquefied petroleum gas industry is highly competitive both within and outside its own ranks. Competition among liquefied petroleum gas marketing companies is confined mainly to the wholesale markets. Wholesale markets have always been and probably will remain the most fertile field for price-cutting competition. The presence of any aggressive merchandiser in either wholesale or retail activities tempts others. The wholesale markets are the most vulnerable. The magnitude of the present sale of liquefied petroleum gases is not great enough to even partially satisfy one real large marketer. The marketed production of the liquefied gases will have to be increased many fold before consumption is atisfactory to the industry. Of course, low prices and intensive competition will in the meantime increase consumption in this industry whose market possibilities have been barely touched, but there is a limit beyond which the trend of a market can not be forced. It would be more logical and to the best interest of consumer and producer alike to develop the wholesale markets in a more co-operative way and thereby avoid many unnecessary expenses and unjustifiable duplications of effort. A good indication of some of the competitive situations which at present exist in the wholesale markets is evidenced by the fact that an analysis of wholesale accounts which our company has lost to competitors shows that at least 50 per cent of these were lost due to price cutting and about 20 per cent to reciprocity tactics. Only 30 per cent were due to outside competition. It should be obvious to all that such tactics only impoverish the industry, since the inevitable result is fewer customers and a lower income. Marketers entering the field seem to fail to recognize that the main problem is to create new markets in an unsaturated field. In most cases, they follow the old line of competition which has been found necessary or justifiable in those businesses whose markets are practically saturated. Until the economics of the situation are more fully understood, it is to be expected that the line of least resistance in all industries will be to take full advantage of all the work of the pioneers. Price cutting will, if carried far enough, always secure the wholesale markets. This is a course of action to which all marketers can resort. It is the way of the weakling as far as merchandising ideas are concerned, but only those favored with natural resources or those with strong financial background can continue to exist and in the end the consumer pays for such unsound practices. It certainly would be to the best interests of all, and this applies to producers of manufactured gas as well as it does to the liquefied petroleum gas manufacturers, if the money lost by price cutting were used for sales engineering purposes to develop new customers instead of donating it to customers who are already sold on the advantages of gas.

Besides being used as domestic and industrial fuel, liquefied petroleum gases can under favorable price conditions be used as a raw material for the manufacture of carbon black, light oils (benzol, toluol, motor benzol, etc.) and as the raw material for the manufacture of solvents which are widely used in the lacquer industry. The probable demand for liquefied petroleum gas as a raw material for the manufacture of solvents does not seem large enough to have an appreciable effect upon the supply. It is possible to manufacture carbon black from liquefied petroleum gases only when the market price of those gases is very low. However, the manufacture of light oils and carbon black by a combination process permits the use of liquefied gases at higher market levels. Investigations have proven that the use of refinery vapors containing high percentages of unsaturated hydrocarbons from cracking

processes gives a higher yield of light oil than do the corresponding paraffins alone. It is, therefore, apparent that the sale of liquefied petroleum gases from refineries must carefully and completely valuate the greater potential worth of the raw material as well as the manufacturing cost and various economics which, in turn, are also tremendously effected by the policies and procedures eventually adopted in connection with the disposal of these gases. The writer is convinced that this problem has not been given all the consideration which it merits and that some of us have been unduly influenced by the actions of our so-called competitors. Investigations indicate that with only slight improvements in the design of the fuel feed system of automobiles the permissible pressure of motor fuels can be increased enough to enable the refiner to use in his finished motor fuel practically all of the potential supply of butane available in the refinery gases. Moreover, butane, or the light oil which can be manufactured from it, contributes materially to the volatility and the antiknock value of the finished gasoline and, therefore, imparts to the gasoline certain properties which will increase its market value. It would, therefore, appear that the supply of butane available for liquefied petroleum gas outlets will be dictated to a great extent by the demand for motor fuel as long as the price of gasoline is not exceeded and satisfactory performance is not sacrificed. Gasoline is the dominant product of petroleum and it is only to be expected that the motor fuel markets will continue to be more attractive as far as prices are concerned than the low form value fuel oil markets.

Butane, as an industrial fuel, encounters competition with natural gas, manufactured gas, and fuels of low form value such as fuel oil, coal, coke, etc. In practically all cases the liquefied petroleum gas products can be sold at a profit at a lower price per therm than manufactured gas. Butane under sufficient economic pressure will, of necessity, find a market outlet at a sufficiently low price level. The lower the price level the more rapidly will this economic pressure cause the commodity to flow to the markets which are awaiting its use. In competition with city gas for the industrial markets butane has the advantages of low investment and production costs and is not limited to sales in any given territory because the sales activities are not confined by a fixed base of operations. Consequently, butane commands an exceptionally flexible and strategic position. The liquefied petroleum gas industry has made very little attempt to compete with city gas for industrial markets, but has confined its efforts primarily in attempting to co-operate for their economic development. Until the gas companies give due consideration to the form value of butane as they do their own products, just that long will they view butane as a raw material competitive with gas oil instead of a finished commodity competitive with their own products. In the meantime, the loss of revenue to the gas companies due to competitive price conditions exceeds many times the gross revenue available from the sale of butane. Little hope exists for the utmost in the way of co-operation between the gas companies and the liquefied petroleum gas industry in developing industrial markets until all these facts have been made self-evident through the sheer force of economic pressure.

Except for a few local situations the competition in the domestic gas retail market is not of serious importance at present. The number of potential customers is large and conditions do not lend themselves readily to flagrant practices. This is undoubtedly due to the fact that it is almost as costly and as difficult to secure business from the customer of a competitor as it is to create a new customer. Price cutting in the domestic gas retail trade is confined primarily to those companies who have had little experience in the business. The secondary reaction of such companies, which is forced upon them by the balance sheet, is to restore price and devote their efforts to more sound economic practices. As time goes on and markets are more fully developed this situation will undoubtedly change and competition will become more intense. In the bottled gas industry many economies could be effected and the industry rapidly developed by co-operative and unified efforts in nationwide merchandising in which due consideration was given to patents, finance, source of fuel, and to distribution, transportation, and merchandising facilities.

Competition, which in most cases the bottled gas trade is unable to meet, is encountered where other gases are distributed through pipe lines. Fortunately for the bottled gas business, it is not economical to lay gas mains save in densely populated areas. This condition leaves a large number of customers available for bottled gas in the suburban and rural districts. As a matter of fact, some of the most profitable bottled gas districts are in territories covered by many gas lines. Electricity promises to be the chief rival of propane for the rural and suburban markets. For this reason much could be gained by full co-operation between the city gas companies and the bottle gas companies because bottled gas makes it possible for the gas companies to more intelligently plan their gas main extensions and to more economically develop their outlying markets. Economic conditions seem to be decidedly on the side of the gaseous product. However, the problem is mainly one of merchandising and it, therefore, behooves the industry to be on the alert because the electrical industry is noted for the remarkable way in which it has aggressively marketed its products.

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New Markets for Appliances and Equipment Resulting From the Use of Butane

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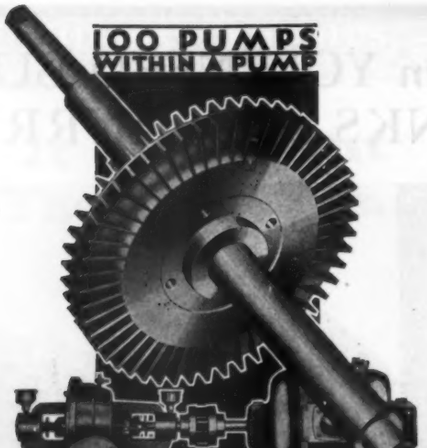

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DEVELOPMENTS IN MODERN MOTOR FUEL

(Continued from Page 71)

sonable freedom from difficulty due to vapor lock. The relationship between the vapor pressure of the final blend, that of the blending stock and of the natural gasoline and the per cent of natural gasoline in the blend, is also given by Alden and Blair.

Effect of Blending on Gum

Natural gasoline is almost entirely free from gum and decreases the gum in the final blend in two ways:

1. By diluting the blending stock with a material containing less gum; and
2. By making the blend more volatile so that it will vaporize more rapidly thereby forming less gum to be deposited.

OUTPUT OF CASINGHEAD GAS IN CALIFORNIA

(Continued from Page 77)

successfully except that as yet there has been no standard practice evolved to insure an equal distribution of the incoming gas and oil to each separator. One method is to connect each flow line from the well directly to one of the high pressure separators while other operators may prefer to use a common manifold.

Operation and Care of Gas Wells

All gas wells are inspected daily, reading of well pressures and delivered volumes from each well are taken daily, and an operating log of each well is kept showing the monthly gas production, the average monthly pressure and a 24-hour shut-in pressure whenever it is possible to obtain this during each month.

Each gas well usually develops individual characteristics that control the methods of operation; some wells might produce water which must be blown down periodically, others might produce sand and shale if pulled too hard, etc. Because of the relatively soft formations from which the wells produce gas, these wells are never permitted to blow wide open, and when tested for capacity, are usually produced through a flow bean against a definite back pressure and the volume is measured by pilot tube method at the outlet of the flow line. This test is made when the well comes in and is part of the original well record.

Gas Storage

Of further interest and possibly coming under the head of production is the companion subject of gas storage. There has been an abundance of excess gas production during the past three years in California, and in an effort to conserve this wasted gas, California oil and gas companies have installed and are operating gas storage systems. This policy was

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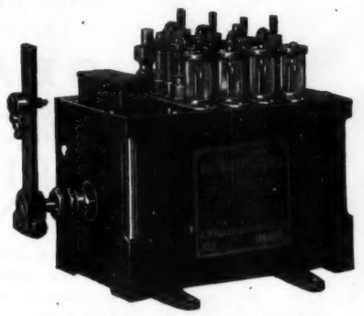

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first started on an extensive scale at the Dominguez Field where the oil companies since May 1, 1928, have stored a total to September, 1930, of 3,638,028,000 feet. This gas was obtained in the Long Beach Field and transported by the transmission lines of the gas companies to the Dominguez Field where it was boosted to 250 pounds by gas company compressor equipment and delivered to the oil companies for the final stage of compression to 750 pounds for injection. This storage plan was attractive to the gas companies in that it provided an outlet during the summer months and at the same time insured them of a greater future gas supply.

At the start of this plan 11 oil wells were chosen as inlet wells. These wells were both edge wells and crest wells and injection pressures varied from 500 to 750 pounds. The total daily rate of injection was as high as 18,000,000 feet daily, depending upon the quantity of gas available.

The above gas was stored in the oil sands at Dominguez. Another equally interesting storage program is the Standard Oil Co. and the Southern California Gas Co.'s co-operative plan of injecting excess gas into the Buena Vista Hills dry gas zone. This plan also was the result of the desire to conserve gas wasted during the summer months of low demand and to make it available for future use. This injection plan makes full use of the gas company's main compressor station and system of transmission lines. Not only is excess gas from the Midway-Sunset Field conserved, but during one summer, large volumes of gas were transported from the Ventura Avenue Field, a distance of 137 miles and stored. More recently Kettleman Hills gas and Midway-Sunset gas is being injected.

Midway-Sunset System

Up until the present, the system in the Midway-Sunset Field has been very simple, consisting of three injection gas wells connected to receive gas from 300 to 400 pounds from the main line compressor plant. The gas is first measured through a master storage meter into the delivery line to the wells, and then metered again at the wells. Storage started May 4, 1928, and was continued intermittently with alternate periods of injection and withdrawal. The total injected to date is 4,161,903,000 feet of which 1,082,283,000 feet were withdrawn leaving a total in storage of 3,079,620,000 feet. During this storage the injection pressures have increased from the initial of about 185 pounds to the present pressure of 300 pounds. A maximum of 9,500,000 feet daily has been stored in any one well but the average daily rate is approximately 1,000,000 feet per well. The wells are equipped with tubing but the gas inlet is through the casinghead.

The three wells chosen are in good mechanical condition and are finished with approximately 400 feet of perforated pipe opposite the gas zone. The perforations are four rows of five-eighths-inch holes with 8-inch centers. These wells are spaced along the section line at 550 feet intervals and had produced up until the time injection started a total of 8,722,533,000 feet. The shut-in pressures at the time injection started was 115 pounds and at present is 245 pounds.

With every effort being made to enforce the state gas conservation law which is intended to prevent waste of natural gas, we now have this situation; on the one hand the gas companies demand which is a maximum during the winter months and a minimum during the summer months; on the other hand the production of casinghead gas by the oil companies is being maintained at a fairly uniform rate, at least it does not fluctuate up and down to suit the demands of the gas companies. To permit the oil operators to continue operating without waste of gas during the summer months or time of minimum demand, and further to insure sufficient gas to the gas companies to meet their winter peaks, some method must be devised to equate the seasonal variation in the gas companies' requirements, and the solution of this problem is to develop a substantial underground gas storage reservoir into which gas can be delivered during the summer and withdrawn during the winter. We now hope to put such a plan into operation which will provide for the storing of approximately 15,000,000 feet per day during eight months of the year and the withdrawal of 30,000,000 feet per day during four months of the year.

TULSA A.I.M.E. MEETING DISCUSSES PROBLEMS

(Continued from Page 77)

time and a change in formation pressure has taken place.

It has also been found in completing wells in the Seminole area trouble has been experienced in drilling into the first Wilcox sand after passing through the Simpson formation. The explanation is now thought to have been found by the use of the bottom hole pressure gauge for the Simpson formation between 4,068 and 4,124 feet registered 1,152 pounds pressure while the first Wilcox between 4,124 and 4,142 feet had a formation pressure of only 637 pounds. These pressures were taken in an open hole opposite both formations.

With the higher pressure above the tools it is assumed that cuttings were forced downward and it is even possible Wilcox formation oil was held back because of the higher pressure existing in upper formation. This same general condition may exist in many other fields, especially in the thick sand zones of California where gas, oil and water formations follow one another closely and the pressures within each formation varies.

Formation Gas Energy

Until recently engineers have not recognized the importance of conserving formation gas energy but now that it is being considered seriously and efforts made to use this energy to drive out all the oil possible from the formation, the knowledge of bottom hole pressures is becoming more and more important.

It has also been found that a close check of bottom hole pressures in a pool will give data indicating the presence of a water drive in a formation and the approximate direction of movement, as well as the position of the edge water with relation to the oil body. Charts taken in the East Earlsboro Pool give such information quite accurately and have proved of much value in aiding the production department in regulating rate of flow from the various wells so that drainage of the oil would be as complete as possible.

While it is admitted that the use of the bottom hole gauge is still in an early stage of its development, with the possibilities for its practical application outlined above to be expanded upon, there seems to be plenty of justification for the engineer to recommend its use to his executive, and it is felt that in a comparatively short time it is going to become a part of all production department equipment and be used freely in wells while drilling, when flowing flush, and under gas lift, and later when they are put on the pump. Without doubt wells so checked and the data applied will give up a greater proportion of the oil and gas within the formation they drain and thus justify the added expense in operation of the bottom hole gauges.

RUMANIAN WELL STILL ABLAZE

NEW YORK, May 18.—Well No. 160 in the Moreni Field of Rumania, which is known in Rumanian oil circles as the "eternal fire" well, this month completes its second year. The well has been burning since the spring of 1929, and thus far has resisted the efforts of experts from many countries, including the United States, who have endeavored to extinguish the blaze.

UNIT OPERATIONS IN RUMANIA

NEW YORK, May 18.—Arrangements for unit operations in the Boldesti Field in Rumania have been completed by leading operators, according to reports from Bucharest. Standard Oil Co. (New Jersey), Shell, Phoenix and Steaua Romana control most of the acreage in this field, and the Shell company will exploit the field under the plan for unitization.

NATURAL GASOLINE PLANTS BY STATES

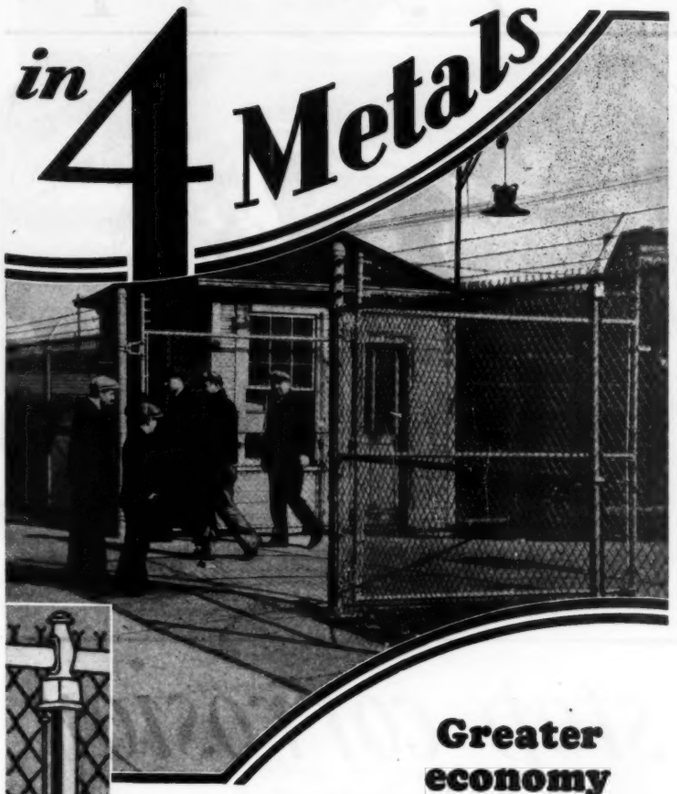
(Continued from Page 78)

CALIFORNIA (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Gilmore-Dabney, Walnut Avenue and Hill St., Long Beach	Sec. 24-4s-13w	Absp.	30,000
Honolulu Oil Corp., Ltd., Taft	Sec. 8-32s-24e, Kern County	C-A	50,000
Lomita Gasoline Co., Box 669, Long Beach	Signal Hill	Absp.	60,000
Mohawk Petroleum Co., 20 Ave. 44, Venice	45th and Speedway, Venice	Absp.	10,000
Montebello Oil Co., Fillmore	Shields lease	Absp.	3,000
North American Oil Consolidated, Room 915, Balfour Bldg., San Francisco	Sec. 28-31s-23e, M.D.B.& M., Kern County	Absp.	3,000
Norwalk Co., The, Santa Fe Springs	SE SW, Sec. 6, T. 3s, R. 11w, S.B.B.&M.	Absp.	120,000
Norwalk Co., The, Fillmore	McNabb estate	Absp.	*10,000
Norwalk Co., The, Saticoy	Saticoy	Absp.	*10,000
Norwalk Co., The, Bin WW, Taft	Sec. 20, T. 31s, R. 24e, M.D.B.&M.	Absp.	5,000
Norwalk Co., The, Bin WW, Taft	SE, Sec. 36, T. 12n, R. 24e, S.B.B.&M.	Absp.	10,000
Ohio Oil Co., Venice	Los Angeles County	Absp.	20,000
Pacific Western Oil Co., Drawer 86, Goleta	Goleta lease, Elwood	Absp.	20,000
Pacific Western Oil Co., Drawer Z, Ventura	Willett lease, Ventura Ave.	Absp.	30,000
Pacific Western Oil Co., 714 W. 10th St., Los Angeles	Rubel lease, Baldwin Hills	Absp.	7,500
Reservoir Hill Gasoline Co., 417 So. Hill St., Los Angeles	Lot 24, Alamitos, Long Beach	Absp.	25,000
Rice Ranch Oil Co., Orcutt	Santa Maria Field	Absp.	6,000
Rice Ranch Oil Co., Orcutt	Santa Maria Field	Absp.	2,500
Rio Grande Oil Co., 417 S. Hill St., Los Angeles	Santa Fe Springs	Absp.	30,000
Ryan & Hackett Co., Inc., 511 Associated Realty Bldg., Los Angeles	Signal Hill	Absp.	3,000
St. Helens Petroleum Co., Ltd., Box 248, Montebello	Sec. 2-2-12, Los Angeles	Absp.	1,000
St. Helens Petroleum Co., Ltd., Box D, Taft	Sec. 16-32-24, Kern County	Absp.	3,000
St. Helens Petroleum Co., Ltd., Route 1, Box 14, Placentia	Sec. 18-3-9, Orange County	Absp.	1,000
Shell Oil Co. of California, 200 Bush St., San Francisco	Graside lease, Coyote Hills	Absp.	40,000
Shell Oil Co. of California	Sec. 27, Coalinga Field	Absp.	4,000
Shell Oil Co. of California	Reyes, Dominguez Field	Absp.	32,000
Shell Oil Co. of California	Rindge, Inglewood Field	Absp.	10,000
Shell Oil Co. of California	Coseboom, Long Beach	Absp.	220,000
Shell Oil Co. of California	Careaga, Santa Maria Field	Absp.	4,000
Shell Oil Co. of California	Gosnell, Ventura Field	Absp.	130,000
Signal Hill Gasoline Co., 820 Richfield Bldg., 555 S. Flower St., Los Angeles	Blk. 64, American Colony tract, Signal Hill Field	Absp.	35,000
Signal Hill Gasoline Co.	Knob of Naples, City of Long Beach, Los Angeles County	Absp.	30,000
Signal Hill Gasoline Co.	Tract 2,200, Los Angeles County	Absp.	*2,000
Signal Hill Gasoline Co.	Blks. F and G, Signal Hill tract, Los Angeles County	Absp.	15,000
Signal Hill Gasoline Co.	Farm Lot 78, American Colony tract, Los Angeles County	Absp.	11,000
Signal Hill Gasoline Co.	Blk. 58, American Colony tract, Los Angeles County	Absp.	35,000
Signal Hill Gasoline Co.	Sec. 3-21s-24e, Kern County	Absp.	5,000
Signal Hill Gasoline Co.	Sec. 32-12n-23w, Kern County	Absp.	3,000
Signal Hill Gasoline Co.	Secs. 8 and 17, T3n-R24w, Kern County	Absp.	6,000
Signal Hill Gasoline Co.	Blk. 712, Wesley Park tract, Orange County	Absp.	5,000
Signal Hill Gasoline Co.	McGrath-Selover lease, Seal Beach	Absp.	35,000
Signal Hill Gasoline Co.	Sec. 36-12n-24w, Kern County	Absp.	2,000
Southwest Refining Co., Long Beach	Long Beach	Absp.	*5,000
Standard Gasoline Co., 225 Bush St., San Francisco	Santa Fe Springs	Absp.	15,000
Standard Gasoline Co.	Santa Fe Springs	Absp.	45,000
Standard Gasoline Co.	Santa Fe Springs	Comp.	Booster
Standard Gasoline Co.	Santa Fe Springs	Absp.	46,000
Standard Gasoline Co.	Montebello	Absp.	2,300
Standard Gasoline Co.	Montebello	Booster	(*)
Standard Gasoline Co.	Murphy Coyote	Absp.	20,000
Standard Gasoline Co.	Kraemer	Absp.	5,500
Standard Gasoline Co.	Brea	Absp.	6,500
Standard Gasoline Co.	Huntington Beach	Absp.	10,000
Standard Gasoline Co.	Huntington Beach	Absp.	10,000
Standard Gasoline Co.	Huntington Beach	Absp.	20,000
Standard Gasoline Co.	Huntington Beach	Absp.	20,000
Standard Gasoline Co.	Huntington Beach	Absp.	10,000
Standard Gasoline Co.	Huntington Beach	Booster	(*)
Standard Gasoline Co.	Huntington Beach	Absp.	(*)
Standard Gasoline Co.	Seal Beach	Absp.	40,000
Standard Gasoline Co.	Seal Beach	Absp.	(*)
Standard Gasoline Co.	Long Beach	Absp.	(*)
Standard Gasoline Co.	Long Beach	Absp.	7,000
Standard Gasoline Co.	Long Beach	Absp.	2,500
Standard Gasoline Co.	Long Beach	Absp.	30,000
Standard Gasoline Co.	Dominguez	Absp.	5,000
Standard Gasoline Co.	Athens	Absp.	5,000
Standard Gasoline Co.	Inglewood	Absp.	(*)
Standard Gasoline Co.	Inglewood	Absp.	(*)
Standard Gasoline Co.	Inglewood	Absp.	7,500
Standard Gasoline Co.	Torrance	Absp.	(*)
Standard Gasoline Co.	Torrance	Absp.	6,000
Standard Gasoline Co.	Whittier	Absp.	375
Standard Gasoline Co.	Cypress	Absp.	4,500
Standard Gasoline Co.	Ventura	Absp.	12,000
Standard Gasoline Co.	Ventura	Absp.	40,000
Standard Gasoline Co.	Ventura	Char.	(*)
Standard Gasoline Co.	Ventura	Absp.	40,000
Standard Gasoline Co.	Ventura	Booster	
Standard Gasoline Co.	Newhall	Absp.	1,000
Standard Gasoline Co.	Taft	Absp.	30,000
Standard Gasoline Co.	Taft	Absp.	30,000
Standard Gasoline Co.	Taft	Absp.	6,000
Standard Gasoline Co.	Taft	Absp.	6,000
Standard Gasoline Co.	Taft	Absp.	10,000
Standard Gasoline Co.	Taft	Absp.	7,500
Standard Gasoline Co.	Taft	Absp.	15,000
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Taft	Absp.	(*)

(Continued on Next Page)

PAGE FENCE



Greater economy is the real reason for PAGE Fence in 4 metals

That American Industries are eager for more fence value per dollar is evident by the universal interest executives have taken in PAGE Fence in four metals.

Atmospheric conditions vary in different localities. Certain atmospheric gases eat fence metals quickly—other gases eat slowly. That's why there is no such thing as a good all around fence metal because what might prove a good investment in one locality may be utter extravagance in another.

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PAGE H-Beam Line Posts of hot galvanized high carbon steel offer distinct advantages, but tubular posts are furnished where preferred.

America's first wire fence since 1883

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nation-wide service through 76 service plants

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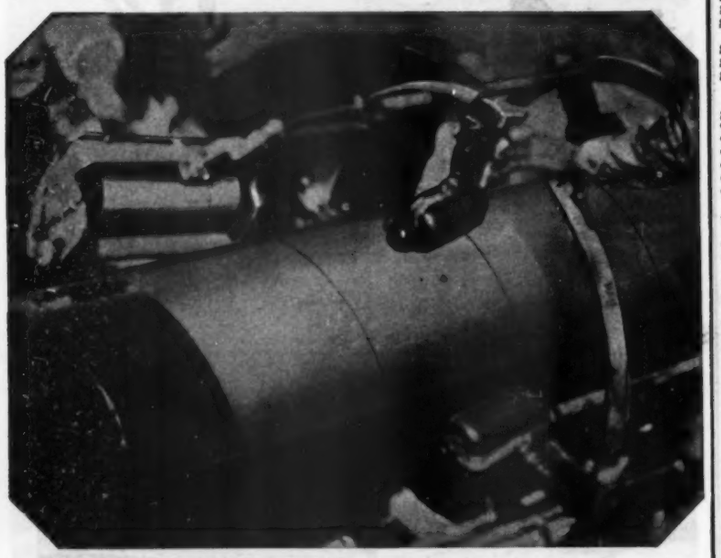
CHAIN LINK OR ORNAMENTAL WROUGHT IRON

wrap your pipe

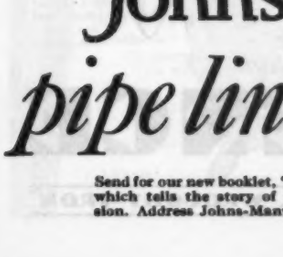


Wrapping pipe in the field at the rate of 15 feet per minute.

stop corrosion

use Johns-Manville Pipe Line Felts

Protecting pipe against corrosion by wrapping with J-M Pipe Line Felts at the pipe mill.



Applying protection with a yard wrapping machine.

THE loss from corrosion of underground pipe lines in this country has been conservatively estimated at $100,000,000 per year. Insure your lines against this needless waste.

To save your pipe, keep it dry—and corrosion cannot start. The one sure way to keep pipes dry—permanently—is to waterproof them with J-M Pipe Line Felts.

Johns-Manville Pipe Line Felts have been used for this work for more than 25 years. They have added years of extra service to hundreds of miles of oil and gas lines. Wrapped into the bitumen coating on the pipe, they furnish the mechanical strength, toughness and pliability to insure lasting resistance to soil stress. Made of asbestos fibres that cannot rot or decay, they form a permanent armor against moisture. They minimize the destructive effects due to electrolysis.

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pipe line protection

Send for our new booklet, "Safeguarding Your Pipe Line Investment," which tells the story of this permanent protection against corrosion. Address Johns-Manville, 292 Madison Avenue, New York City.

JM

NATURAL GASOLINE PLANTS BY STATES

CALIFORNIA (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Standard Gasoline Co.	Taft	Absp.	(*)
Standard Gasoline Co.	Wheeler Ridge	Absp.	500
Standard Gasoline Co.	Kettleman Hills	Absp.	110,000
Standard Gasoline Co.	Kettleman Hills	Absp.	140,000
Standard Gasoline Co.	Kettleman Hills	Absp.	130,000
Standard Gasoline Co.	Lost Hills	Absp.	(*)
State Gasoline Corp., 900 Spring Arcade Bldg., Los Angeles	Long Beach	Absp.	15,000
State Gasoline Corp.	Long Beach	Absp.	22,500
State Gasoline Corp.	Long Beach	Absp.	*20,000
Superior Oil Co., 1100 Natl. City Bank Bldg., Los Angeles	Joughin lease, Torrance Field	Absp.	2,300
Superior Oil Co.	Kettleman Hills Field	Absp.	110,000
Texas Company, The (California)	Los Angeles County	Absp.	14,000
Texas Company, The (California)	Los Angeles County	Absp.	20,000
Texas Company, The (California)	Los Angeles County	Absp.	12,000
Texas Company, The (California)	Los Angeles County	Absp.	75,000
Texas Company, The (California), Long Beach	Los Angeles County	Absp.	17,000
Texas Company, The (California), Coalinga	Kings County (Kettleman Hills)	Absp.	60,000
Texas Company, The (California), Santa Fe Springs	Los Angeles County	Absp.	120,000
Texas Company, The (California), Athens	Los Angeles County	Absp.	*12,000
Texas Company, The (California), Huntington Beach	Los Angeles County	Absp.	20,000
Texas Company, The (California), Montebello	Los Angeles County	Absp.	2,500
Texas Company, The (California), South Mountain	Ventura County	Comp.	12,000
Texas Company, The (California), Fillmore	Ventura County (Shields lease)	Absp.	3,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Morse lease, Richfield Field	Absp.	20,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Stearns lease, Brea Field	Absp.	22,500
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Bell lease, Santa Fe Springs	Absp.	100,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Heilman lease, Dominguez Field	Absp.	50,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Rosecrans lease, Rosecrans Field	Absp.	27,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Santa Paula refinery, Santa Paula Field	Absp.	250
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Newlove lease, Santa Maria Field	Absp.	18,000
Universal Consolidated Oil Co., 716 Richfield Bldg., Los Angeles	Fee property, Lost Hills Field	Absp.	2,000
West Coast Refining Co., 1320 Pacific Finance Bldg., Los Angeles	Richfield	Absp.	50,000
Western Natural Gasoline Corp., Commercial Exchange Bldg., Los Angeles	Signal Hill	C-A	10,000
Western States Gasoline Corp., 609 S. Grand, Los Angeles	Sec. 2, T. 22s, R. 17e, North Dome, Kettleman Hills, Kings County	Absp.	150,000
Wilshire Oil Co., Inc., 2455 E. 27th St., Vernon	Santa Fe Springs	Absp.	50,000

COLORADO

Continental Oil Co., Denver, Colo.	Sec. 30-6Sw-8n	Absp.	1,000
Continental Oil Co., Denver, Colo.	Sec. 31-6Sw-10n	Absp.	3,500
Mountain States Oil Corp.	Barela, S. W.	Absp.	6,000

ILLINOIS

American Oil Development Co., 1414 Oliver Bldg., Pittsburgh, Pa.	Crawford County	Comp.	200
American Oil Development Co., 1414 Oliver Bldg., Pittsburgh, Pa.	Crawford County	Comp.	260
American Oil Development Co., 1414 Oliver Bldg., Pittsburgh, Pa.	Crawford County	Comp.	75
Arkansas Fuel Oil Co., Robinson	Sec. 3, Prairie Twp., Crawford	Comp.	2,000
Associated Producers Co., 17 Battery Place, New York, N. Y.	Crawford County	Comp.	1,300
Bell Bros., Robinson	Casey	Comp.	150
Bell Bros., Robinson	Robinson	Comp.	130
Big Four Oil & Gas Co., Pittsburgh, Pa.	Bridgeport	Comp.	300
Brenneman & MacDonell, Oblong	Sec. 6-6-13, Crawford County	Comp.	1,000
Brenneman & MacDonell, Oblong	Sec. 6-6-13, Crawford County	Comp.	200
Bruner, A., & Co., 312 Wright Bldg., Tulsa, Okla.	Lawrenceville	Comp.	*200
International Oil & Gas Co., Washington, Pa.	Crawford County	Comp.	2,000
Kennedy, W. C., Co., Bradford, Pa.	Oblong	Comp.	225
Kewanee Oil & Gas Co., Robinson	Crawford	Comp.	150
Kewanee Oil & Gas Co., Robinson	Lawrence County	Comp.	150
Liberty Oil & Gas Co., Warren, Pa.	L. F. Houghton lease 1,009, W half SW, Sec. 33-7-13w and NW NW, Sec. 4-6-13w	Comp.	30
Henry C. Lord, Robinson	Oblong, 4 mi. SE	Comp.	*35
Mahutska Oil Co., Robinson	3 mi. SW of Story	Comp.	700
Mahutska Oil Co., Robinson	3 mi. NE of Oblong	Comp.	500
Mallory & Crawford, Bradford Pa.	Oblong, ½ mi. E	Comp.	110
Nolan & Lamberton, Tulsa, Okla.	Sec. 12-7-14, Crawford County	Comp.	50
Ohio Oil Co., Casey	Clark County	Comp.	124
Ohio Oil Co., Casey	Clark County	Comp.	241
Ohio Oil Co., Casey	Cumberland County	Comp.	1,150
Ohio Oil Co., Casey	Cumberland County	Comp.	437
Ohio Oil Co., Oblong	Crawford County	Comp.	405
Ohio Oil Co., Oblong	Crawford County	Comp.	242
Ohio Oil Co., Oblong	Crawford County	Comp.	310
Ohio Oil Co., Robinson	Crawford County	Comp.	243
Ohio Oil Co., Hardinville	Crawford County	Comp.	756
Ohio Oil Co., Hardinville	Crawford County	Comp.	100
Ohio Oil Co., Oblong	Crawford County	Comp.	342
Ohio Oil Co., Stoy	Crawford County	Comp.	310
Ohio Oil Co., Stoy	Crawford County	Comp.	833
Ohio Oil Co., Oblong	Crawford County	Comp.	200
Ohio Oil Co., Oblong	Crawford County	Comp.	1,130
Ohio Oil Co., Lawrenceville	Lawrence County	Comp.	270
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,170
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	570
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	570
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,300
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,190
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	990
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,000
Ohio Oil Co., Lawrenceville	Lawrence County	Comp.	500
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,050
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,050
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	350
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	390
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,400

(Continued on Next Page)

NATURAL GASOLINE PLANTS BY STATES

ILLINOIS (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,500
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,500
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	390
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,200
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	375
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,140
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	770
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	450
Rogers, R. G., Oil Co.	Oblong, 6 mi. NW	Comp.	25
Snowden & McSweeney Co., Bridgeport	E half SE, Sec. 17-3-12w	Topping	1,000
Splane, W. W., Oil City, Pa.	Robinson	Comp.	300
Stranahan & Cheuvront, 405 W. Main St., Oblong	Sec. 11-7-14, Crawford County	Comp.	25
Stranahan & Cheuvront, 405 W. Main St., Oblong	Sec. 22-6-13, Crawford County	Comp.	19
Stranahan & Cheuvront, 405 W. Main St., Oblong	Sec. 25-7-13, Crawford County	Comp.	25
Union Gasoline Co., Caney	NW NW, Sec. 29-29-13, Washington County	Absp.	5,000
Vacuum Gasoline Co., Lawrenceville	Lawrence County	Comp.	5,000
Vincennes Oil & Gas Co., Vincennes, Ind.	Lawrence County	Comp.	5,000
Warner-Caldwell Oil Co., Titusville, Pa.	Oblong	Comp.	200

KANSAS

Altitude Petroleum Co., Box 1354, Tulsa, Okla.	Chanute	Comp.	*1,500
Barnsdall Oil Co., Route 2, Box 173, Oxford, Kans.	W half NW, Sec. 20-33-3	Absp.	8,200
Empire Oil & Refining Co., Caney	SW, Sec. 13-35-13, Montgomery County	Absp.	*10,000
Empire Oil & Refining Co., Arkansas City	SE, Sec. 13-34-3, Cowley County	Absp.	15,000
Empire Oil & Refining Co., Teterville	SW, Sec. 16-23-9, Greenwood County	Absp.	10,000
Empire Oil & Refining Co., Madison	NW, Sec. 8-23-11, Greenwood County	Absp.	9,000
Empire Oil & Refining Co., Sallyards	SE, Sec. 9-26-8, Butler County	Absp.	Recl'm'g
Empire Oil & Refining Co., Thrall	SE half, Sec. 29-23-10, Greenwood County	Comp.	7,500
Empire Oil & Refining Co., Wellington	SW, Sec. 17-32-1, Sumner	Absp.	*12,000
Empire Oil & Refining Co., Cassoday	SW, Sec. 2-23-9, Greenwood County	Absp.	Recl'm'g
Empire Oil & Refining Co., Wichita	NW, Sec. 17-28-1, Sedgwick County	Absp.	40,000
Kansas Gas & Gasoline Co., McPherson	McPherson County	Absp.	5,000
Kansas Gas & Gasoline Co., Medicine Lodge	Barber County	Absp.	5,000
Kansas Gasoline Co., Box 1007, Winfield	Lewis farm, Sec. 24-32s-4e, Cowley County	Absp.	5,000
McPherson Oil & Gas Development Co., United Life Bldg., Salina	SW, Sec. 29-18-2w, McPherson County	Absp.	10,000
Pep Gasoline Co.	Sedan, 2 mi. E	Comp.	1,500
Phillips Petroleum Co., Phillips Bldg., Bartlesville, Okla.	NE SE, Sec. 10-23-9, Greenwood County	Absp.	6,000
Phillips Petroleum Co., Phillips Bldg., Bartlesville, Okla.	NE NW, Sec. 12-22-10, Greenwood County	Comp.	6,000
Shell Petroleum Corp., Oxford	SE, Sec. 25-31s-2e	Absp.	5,000
Sinclair Oil & Gas Co., Box E, Kenbro	SW, Sec. 30-22-10	Comp.	7,000
Texas Co., The (Delaware), O'Brien Switch	Sec. 31-30n-6e, Cowley County	Absp.	12,400
Texas Co., The (Delaware), Gordon	Sec. 28-26n-5e, Butler County	Absp.	6,000
Washington Development Co., Wellington	Sec. 14-32s-3w, Sumner County	Absp.	15,000

KENTUCKY

Coast Oil Co., Monticello	Monticello	Comp.	*500
Heck, W. B., & Co., Box 164, Owensboro, Ky.	Monticello	Comp.	*300
Kentucky Pipe Line Co., 311 W. Chestnut St., Louisville	Winchester, 1½ mi. SE	Char.	2,000
Swiss Oil Corp., Lexington	Fixer, Lee County	Absp.	1,000
Virginian Gasoline & Oil Co., Kermit, W. Va.	Martin County	Absp.	10,000
Virginian Gasoline & Oil Co., Catlettsburg	Boyd County	Absp.	24,000

LOUISIANA

Arkansas Fuel Oil Co., Homer	Sec. 24-21n-8w, Claiborne Parish	Comp.	2,000
Arkansas Fuel Oil Co., Plain Dealing	Sec. 31-11w-23n, Bossier Parish	Absp.	15,000
Arkansas Natural Gas Corp., Monroe	Sec. 36-18n-4e, Ouachita Parish	Absp.	8,000
Columbian Gasoline Corp., R.F.D., Rayville	Sec. 10-16n-6e, Richland Parish	Absp.	16,000
Columbian Gasoline Corp., Swartz	Sec. 5-18n-5e, Ouachita Parish	Absp.	10,000
Columbian Gasoline Corp., Fairbanks	Sec. 37-19n-4e, Ouachita Parish	Absp.	4,000
Columbian Gasoline Corp., Fairbanks	Sec. 2-19n-4e, Ouachita Parish	Absp.	10,000
Columbian Gasoline Corp., Bastrop	Sec. 37-20n-5e, Morehouse Parish	Absp.	6,000
Columbian Gasoline Corp., Fairbanks	Sec. 19-20n-5e, Morehouse Parish	Absp.	3,000
DeSota Gasoline Co.	Mansfield	Comp.	980
Gulf Refining Co. of Louisiana, Mooringsport	Caddo	Comp.	8,000
Gulf Refining Co. of Louisiana, Mooringsport	Homer	Absp.	10,000
Herkness, J. Smylie, R.F.D. 3, Bastrop	Morehouse Parish	Absp.	1,500
Huber, J. M., Co. of Louisiana, Inc., Swartz	Sec. 5-18n-5e	Absp.	6,000
Louisiana Gas & Fuel Co.	Alto	Absp.	36,000
Louisiana Gas & Fuel Co.	Uscarco	Absp.	4,000
Louisiana Oil Refining Corp., Ardis Bldg., Shreveport	Sec. 33, Webster Parish	Absp.	20,000
Magnolia Petroleum Co., Harmon	Sec. 12-12-11, Red River Parish	Absp.	1,500
Magnolia Petroleum Co., Gilliam	Sec. 24-21n-15w, Caddo Parish	Absp.	1,300
Monroe-Louisiana Carbon Co., Swartz	Secs. 28 and 33, T19n-R5e, Ouachita Parish	Char.	*2,000
Ohio Oil Co., Haynesville	Claiborne Parish	Absp.	9,400
Ohio Oil Co., Treat	Webster Parish	Absp.	10,000
Pala Oil Co., Inc., Shreveport	Sec. 15-15-20, Caddo Parish	Comp.	325
Palmer Corp. of Louisiana, Shreveport	Sec. 1-22n-11w, near Cotton Valley	Absp.	25,000
Palmer Corp. of Louisiana, Shreveport	Sec. 32-19n-5e, Swartz	Absp.	5,000
Phillips Petroleum Co., Homer	W half SW, Sec. 19-21-7, Claiborne Parish	Comp.	10,500
Reserve Natural Gas Co. of Louisiana, Shreveport	Sec. 10-17n-14w, Caddo Parish	Absp.	10,000
Reserve Petroleum Co., Box 172, Haynesville	Haynesville	Absp.	4,000
Reserve Petroleum Co.	Homer	Comp.	2,500
Southwestern Gas & Electric Co., Oil City	Oil City	Comp.	450
Standard Oil Co. of Louisiana, Trees	Caddo Field, near Trees	Absp.	7,000
Standard Oil Co. of Louisiana, Homer	Claiborne Field, near Homer	Absp.	6,500
Stanolind Oil & Gas Co., Gilliam	Gilliam	Absp.	5,000
Texas Company, The (Delaware), Oil City	Sec. 3-20n-16w, Caddo Parish	Comp.	4,000

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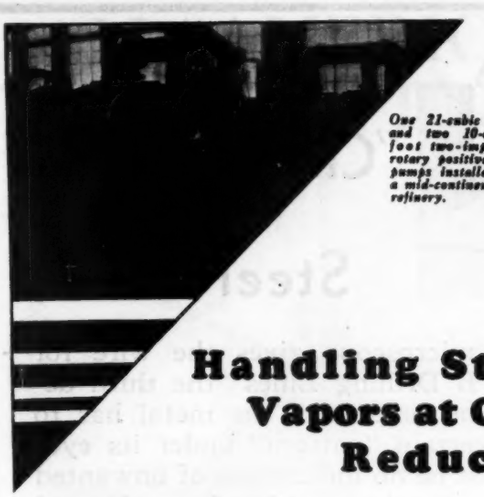

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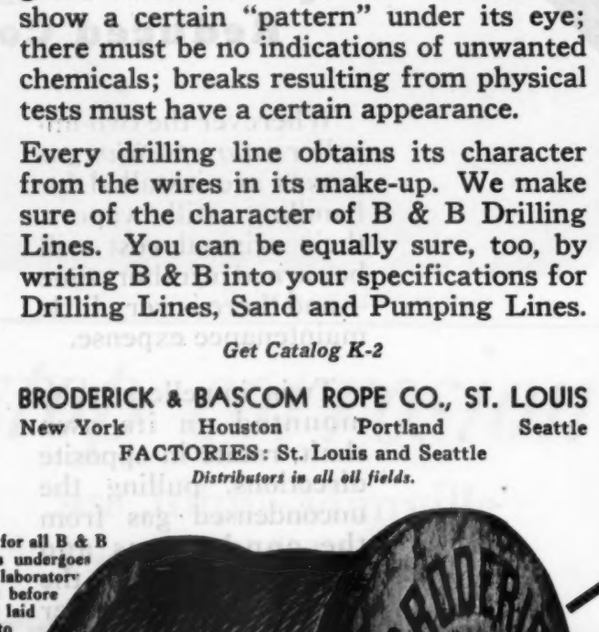

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NATURAL GASOLINE PLANTS BY STATES

LOUISIANA (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Texas Company, The (Delaware), Oil City	Sec. 22-21n-15w, Caddo Parish	Absp.	18,800
Texas Company, The (Delaware), Mooringsport	Sec. 19-20n-15w, Caddo Parish	Comp.	696
Texas Company, The (Delaware), Naborton ...	Sec. 34-13n-12w, De Soto	Comp.	4,000
Union Gas Products, Inc., 710 Ouachita Bank Bdg., Monroe	Near Swartz	C-A	6,006
United Carbon Co., Monroe	Sec. 10-16-6, Richland Parish	Absp.	9,000
United Carbon Co., Monroe	Sec. 17-20-5, Richland Parish	Char.	*5,000
United Carbon Co., Monroe	Sec. 13/24-21-5	Char.	*2,000
United Carbon Co., Monroe	Sec. 5-18-5	Absp.	4,000
United Carbon Co., Monroe	Sec. 13-19-5	Absp.	*2,000

NEW MEXICO

Phillips Petroleum Co., Artesia	SW NW, Sec. 16-18-28, Eddy County	Absp.	9,000
Phillips Petroleum Co., Hobbs	N half NW, Sec. 4-19-38, Lea County	Absp.	40,000
Shell Petroleum Corp., Hobbs	SW, Sec. 19-18s-38e	Absp.	24,000

NEW YORK

Empire Gas & Fuel Co., Andover	Lot 55, Andover Twp.	Absp.	500
Nathan Nichols	1 mi. E of Richburg	Comp.	600
Producers Gas Co.	Bolivar	Absp.	1,500
Wirt Gasoline Co., Bradford, Pa.	New York State	Comp.	*500

OHIO

American Oil Development Co., Pittsburgh, Pa.	Monroe County	Comp.	400
American Oil Development Co., Pittsburgh, Pa.	Monroe County	Comp.	200
East Ohio Producing & Refining Co.	Doylestown, 5 mi. S	Char.	6,000
Hope Construction & Refining Co., Fly	Fly	Comp.	300
Hope Construction & Refining Co., New Matamoras	New Matamoras	Comp.	200
Hope Construction & Refining Co., New Matamoras	New Matamoras	Absp.	1,200
Jefferson Gasoline Co., Ryland	Sec. 27, Wells Twp.	Comp.	250
Muskingum Oil Co., Sistersville, W. Va.	Perry Twp., Monroe County	Comp.	*250
Norris, Mrs. Jennie, Parkersburg, W. Va.	Sec. 11, Newport Twp., Washington County	Comp.	100
Preston Oil Co., Homer	Burlington Twp., Licking County	Absp.	15,000
Preston Oil Co., Paronia	Weller Twp., Richland County	Absp.	12,000
Preston Oil Co., Sugar Grove	Berne Twp., Fairfield County	Absp.	10,000
Preston Oil Co., R.F.D. 1, Summer Field	Stock Twp., Noble County	Absp.	3,000
Preston Oil Co., New Straitsville	Falls Gore Twp., Hocking County	Absp.	*2,000
Preston Oil Co., Stewart	Rome Twp., Athens County	Absp.	*5,000
Preston Oil Co., R.F.D. 1, Racine	Sutton Twp., Meigs County	Absp.	*5,000
Preston Oil Co., R.F.D. 7, Zanesville	Wayne Twp., Muskingum County	Absp.	*5,000
Preston Oil Co., Box 43, Medina	York Twp., Medina County	Absp.	*5,000
Pure Oil Co., Sistersville, W. Va.	Carson	Comp.	150
Pure Oil Co., Sistersville, W. Va.	Eckart	Comp.	125
Pure Oil Co., Sistersville, W. Va.	Ramsey	Comp.	100
Reno Oil Co., Sistersville, W. Va.	Monroe County	Comp.	100
River Gas Co.	New Matamoras	Absp.	125
Southern Oil Co., Schley	Archers Fork, Independence, Washington County	Comp.	150
Southern Oil Co., Southern Valley	Sycamore Valley, Bethel, Monroe County	Comp.	50
Sylvania Producing Co.	Woodfield, 20 mi. S	Comp.	200
Tuel & Thoenen	Fly	Comp.	150
Tuel & Thoenen	Fly, 2 mi. SW	Comp.	200
Tuel & Thoenen	New Matamoras, 6 mi. SW	Comp.	150
Tuel & Thoenen	New Matamoras, 2 mi. W	Comp.	150
Tyler Oil Co., Sistersville, W. Va.	Monroe County	Comp.	27

OKLAHOMA

Akin Gasoline Co., Box 1402, Tulsa	Dewey	Comp.	1,000
Akin Gasoline Co., Box 1402, Tulsa	Bixby	Comp.	1,000
Altitude Petroleum Corp., Box 1354, Tulsa	Oilton	Absp.	*3,600
Amerada Petroleum Corp., Box 596, Ardmore..	W half SE, Sec. 20-5s-1e, Carter County	Absp.	*1,500
Amerada Petroleum Corp., Box 686, Healdton..	SE cor., Sec. 31-2s-2w, Carter County	Absp.	6,000
Amerada Petroleum Corp., Box 1028, Okmulgee	NE NE, Sec. 13-12n-11e, Okfuskee County	Comp.	1,750
Amerada Petroleum Corp., Box 596, Earlsboro..	Sec. 16-9n-5e, Pottawatomie County	Absp.	11,600
Amerada Petroleum Corp., Harjo	N half W half NE, Sec. 7-8n-5e, Pottawatomie County	Absp.	14,000
Amerada Petroleum Corp., Box 1257, Seminole..	SW NW, Sec. 17-9n-5e, Seminole	Absp.	8,500
Amerada Petroleum Corp., Route 7, Oklahoma City	SE, Sec. 30-11n-2w, Oklahoma County	Comp.	6,000
Barco Gasoline Co., Wirt	Healdton Field, Carter County	Comp.	3,000
Barnsdall Oil Co., Box 224, Avant	SE, Sec. 18-23-12	Absp.	1,500
Barnsdall Oil Co., Box 518, Earlsboro	SW SW, Sec. 11-8-5	Absp.	14,300
Barnsdall Oil Co., Box 518, Earlsboro	NE NE, Sec. 15-9-5	Absp.	2,400
Barnsdall Oil Co., Box 2033, Tulsa	SE, Sec. 5-20-12	Absp.	1,000
Barnsdall Oil Co., Drawer A, Barnsdall	NW NW, Sec. 29-25-11	Absp.	2,200
Barnsdall Oil Co., Box 228, Osage	SW SW, Sec. 26-21-9	Absp.	1,900
Barnsdall Oil Co., Box 856, Beggs	SW, Sec. 23-14-11	Comp.	1,200
Barnsdall Oil Co., Box 856, Beggs	N half NE, Sec. 6-14-12	Absp.	2,600
Bartlett Gasoline Co., 303 Wright Bldg., Tulsa..	Butler	Absp.	15,000
Bell Oil & Gas Co., Tulsa	Mounds	Absp.	1,500
Bell Oil & Gas Co., Tulsa	Wynona	Absp.	1,000
Bell Oil & Gas Co., Tulsa	Stone Bluff	Absp.	1,000
Carter Oil Co., Box 2045, Tulsa	Sec. 23-4s-2w, Carter County	Absp.	10,500
Carter Oil Co., Box 2045, Tulsa	Sec. 9-26n-6e, Osage County	Absp.	22,000
Carter Oil Co., Box 2045, Tulsa	Sec. 3-10n-6e, Seminole County	Absp.	25,000
Carter Oil Co., Box 2045, Tulsa	Sec. 15-9n-6e, Seminole County	Absp.	50,000
Carter Oil Co., Box 2045, Tulsa	Sec. 34-10n-6e, Seminole County	Absp.	52,000
Carter Oil Co., Box 2045, Tulsa	Sec. 14-7n-6e, Seminole County	Absp.	50,000
Carter Oil Co., Box 2045, Tulsa	Sec. 20-9n-6e, Seminole County	Absp.	50,000
Carter Oil Co., Box 2045, Tulsa	Sec. 23-8n-6e, Seminole County	Absp.	15,000
Coline Gasoline Corp.	Oklahoma City	Absp.	80,000
Comar Gasoline Co., Tonkawa	NE, Sec. 2-24n-1w	Absp.	20,000
Comar Gasoline Co., Tonkawa	SW, Sec. 23-25n-1w	Absp.	5,000
Comar Oil Co., Blackwell	SW, Sec. 21-29n-1w	Absp.	5,000
Comar Oil Co., Blackwell	NW, Sec. 5-28n-1w	Absp.	5,000
Continental Oil Co., Ponca City	Sec. 33-26n-2e	Absp.	12,000
Continental Oil Co., Ponca City	Sec. 1-24n-2e	Absp.	3,000

(Continued on Next Page)

NATURAL GASOLINE PLANTS BY STATES

OKLAHOMA (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Cosden, J. S., Inc., Fort Worth, Tex.	Sec. 31-19n-4w, Logan County	C-A	30,000
Cosden, J. S., Inc., Fort Worth, Tex.	Sec. 19-11n-11e, Okfuskee County	Comp.	2,000
Cromwell-Franklin Oil Co., Oklahoma City	SE SW SE, Sec. 12-11n-3w	Absp.	30,000
Crosbie & Moran, Inc., Box 715, Earlsboro	W half SW NW, Sec. 9-9-5	Absp.	15,000
Crosbie & Moran, Inc., Box 715, Earlsboro	NE NE, Sec. 2-9-5	Absp.	20,000
Crosbie & Moran, Inc., Box 247, Marshall	NW, Sec. 20-19-4	Absp.	20,000
Crosbie & Moran, Inc., Box 1727, Konawa	SE SE, Sec. 8-6-6	Absp.	30,000
Crosbie & Moran, Inc., Box 84, Pearson	S half S half NE, Sec. 15-7-4	Absp.	30,000
Crosbie, Porter & Martin, Box 625, Okemah	SW SE, Sec. 29-12-10	Absp.	20,000
De Soto Gasoline Co., Muskogee	Sec. 5-14-18	Comp.	350
Devonian Oil Co., Chickasha	NE, Sec. 32-7n-6w	Absp.	2,000
Devonian Oil Co., Kellyville	SE, Sec. 22-17n-10e	Absp.	20,000
Devonian Oil Co., Stroud	NE, Sec. 34-15n-6e	Absp.	5,000
Dewey Portland Cement Co., Dewey, Okla.	Dewey	Absp.	2,500
Eagle-Picher Mining & Smelting Co., Henryetta, Okla.	Sec. 6-11-13, Okmulgee County	Absp.	5,000
Empire Oil & Refining Co., Tallant	SE, Sec. 35-25-10, Osage County	Absp.	20,000
Empire Oil & Refining Co., Weleetka	NW, Sec. 16-11-11, Okfuskee County	Absp.	Recl'm'g
Empire Oil & Refining Co., Webb City	SW, Sec. 12-27-5, Osage County	C-A	Recl'm'g
Empire Oil & Refining Co., Seminole	SE, Sec. 24-9-6, Seminole County	Absp.	25,000
Empire Oil & Refining Co., Seminole	NE, Sec. 34-9-6, Seminole County	Absp.	20,000
Empire Oil & Refining Co., Seminole	SW, Sec. 14-8-6, Seminole County	Absp.	25,000
Empire Oil & Refining Co., Seminole	NE, Sec. 11-8-5, Seminole County	Absp.	25,000
Empire Oil & Refining Co., Konowa	NW, Sec. 9-6-6, Seminole County	Absp.	20,000
Empire Oil & Refining Co., Asher	NE, Sec. 22-6-3, Pottawatomie County	Absp.	30,000
Empire Oil & Refining Co., Konowa	NE, Sec. 29-6-6, Seminole County	Absp.	10,000
Enfisco Oil Corp., Box 2021, Tulsa	NE, Sec. 17-17-13, Bixby	Comp.	1,500
Foster & Norwood Oil Co., Bartlesville	Barnsdall	Absp.	4,000
Franklin, Wirt, Petroleum Corp., Oklahoma City	NW NW, Sec. 12-11n-3w	Absp.	20,000
Gilmore, Forrest E., Co., Beacon Life Bldg., Tulsa	NE, Sec. 14-19-8	Absp.	*2,000
Gilmore, Forrest E., Co., Beacon Life Bldg., Tulsa	SE, Sec. 11-7-6	Comp.	*4,000
Gilmore, Forrest E., Co., Beacon Life Bldg., Tulsa	NW, Sec. 23-8-6	Comp.	7,000
Gilmore, Forrest E., Co., Beacon Life Bldg., Tulsa	SE, Sec. 35-8-6	Comp.	10,000
Gilmore, Forrest E., Co., Beacon Life Bldg., Tulsa	NW, Sec. 30-11-11	Comp.	*5,000
Gilmore, Forrest E., Co., Beacon Life Bldg., Tulsa	SE, Sec. 1-17-10	Absp.	3,000
Gilmore, Forrest E., Co., Beacon Life Bldg., Tulsa	SE, Sec. 11-7-6	Comp.	*5,000
Glomar Gasoline Co., Jennings	Jennings	Absp.	2,500
Glomar Gasoline Co., Oakhurst	Oakhurst	Absp.	1,800
Grimes, Charles W., Otha H., Box 322, Tulsa	Sec. 22-10-11	Absp.	7,000
Grimes, Charles W., and Park T., Box 322, Tulsa	Sec. 35-20-9	Comp.	1,000
Grimes, Otha H., and Roy O. Neal, Drumright	Sec. 17-17-7, Creek County	Absp.	3,000
Grimes Gasoline Co., Tulsa	Okemah	Absp.	5,000
Grimes Gasoline Co., Tulsa	Keystone	Absp.	2,000
Grimes Gasoline Co., Tulsa	Weleetka	Comp.	2,000
Grimes Gasoline Co., Tulsa	Weleetka	Absp.	5,000
Gypsy Oil Co., Box 2044, Tulsa	N half SW, Sec. 16-17-12, Creek County	Comp.	19,200
Gypsy Oil Co., Box 2044, Tulsa	E half NE, Sec. 5-17-7, Creek County	Comp.	4,700
Gypsy Oil Co., Box 2044, Tulsa	NE SW, Sec. 10-16-7, Creek County	Comp.	2,800
Gypsy Oil Co., Box 2044, Tulsa	SE, Sec. 1-21-7, Osage County	Comp.	3,100
Gypsy Oil Co., Box 2044, Tulsa	NW, Sec. 24-27-5e, Osage County	Absp.	15,800
Gypsy Oil Co., Box 2044, Tulsa	NW, Sec. 2-24-1w, Noble County	Absp.	5,200
Gypsy Oil Co., Box 2044, Tulsa	NE, Sec. 3-14-8e, Creek County	Absp.	2,200
Gypsy Oil Co., Box 2044, Tulsa	NW, Sec. 11-14n-5e, Lincoln County	Absp.	3,500
Gypsy Oil Co., Box 2044, Tulsa	SE SW, Sec. 14-7n-6e, Seminole County	Absp.	18,400
Gypsy Oil Co., Box 2044, Tulsa	SE NW, Sec. 7-8-6, Seminole County	Absp.	12,400
Harland Oil Co., Wolco, Okla.	SW, Sec. 20-25-11	Absp.	1,200
Harland Oil Co., Wolco, Okla.	NE, Sec. 25-24-11	Absp.	1,200
Indian Territory Illuminating Oil Co., Bartlesville	SE, Sec. 24-11-3, Oklahoma City Field	C-A	20,000
Indian Territory Illuminating Oil Co., Bartlesville	SW, Sec. 19-11-2, Oklahoma City Field	C-A	20,000
Indian Territory Illuminating Oil Co., Bartlesville	SE, Sec. 13-11-3, Oklahoma City Field	C-A	20,000
Indian Territory Illuminating Oil Co., Bartlesville	NW, Sec. 31-11-2, Oklahoma City Field	C-A	20,000
Indian Territory Illuminating Oil Co., Bartlesville	SW, Sec. 14-11-3, Oklahoma City Field	Comp.	20,000
Indian Territory Illuminating Oil Co., Bartlesville	SE, Sec. 11-11-3, Oklahoma City Field	Comp.	20,000
Indian Territory Illuminating Oil Co., Bartlesville	NE, Sec. 19-11-2, Oklahoma City Field	C-A	20,000
Indian Territory Illuminating Oil Co., Bartlesville	SE, Sec. 13-11-3, Oklahoma City Field	C-A	20,000
Lone Star Gas Co., Hollis	4 mi. NW Hollis	Absp.	12,000
Magnolia Petroleum Co., Yale	NE SW, Sec. 6-19n-6e, Payne County	Absp.	4,500
Magnolia Petroleum Co., Oilton	NE, Sec. 7-18n-7e, Creek County	Absp.	5,500
Magnolia Petroleum Co., Shamrock	SW, Sec. 3-16n-7e, Creek County	Absp.	8,250
Magnolia Petroleum Co., Davenport	SW, Sec. 34-15n-5e, Lincoln County	Absp.	3,750
Magnolia Petroleum Co., Earlsboro	NW NW SE Sec. 10-9n-5e, Seminole County	Absp.	6,000
Magnolia Petroleum Co., St. Louis	NW SW SE, Sec. 15-7n-4e, Pottawatomie County	Absp.	13,000
Magnolia Petroleum Co., Wewoka	W 7.65 ac., Lot 4, Sec. 32-8n-8e, Seminole County	Absp.	5,750
Magnolia Petroleum Co., Duncan	NW NW, Sec. 19-1s-3w, Stephens County	Comp.	600
Magnolia Petroleum Co., Graham	SE SE SE, Sec. 23-2s-3w, Carter County	Absp.	5,000
Magnolia Petroleum Co., Healdton	SW NW NE, Sec. 15-4s-3w, Carter County	Absp.	1,750
Masoneal Gasoline Co., Box 591, Tulsa	Sec. 23-21n-8e, Osage County	Comp.	*1,000
Midco Oil Corp., Tulsa	Billings, 8 mi. S	Comp.	*20,000

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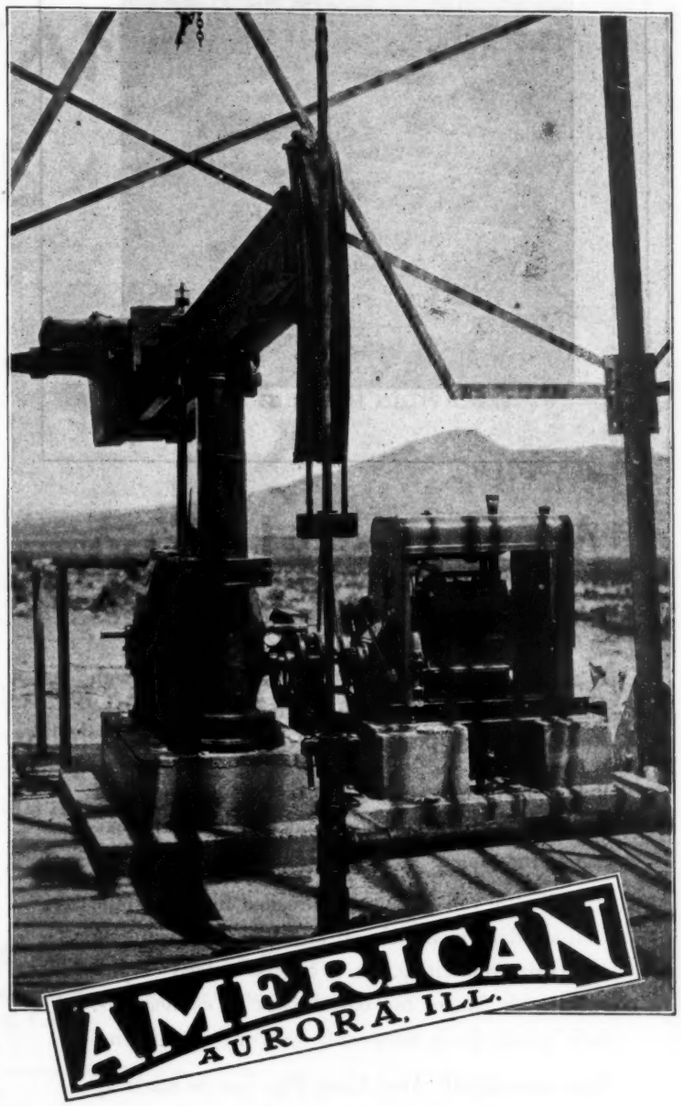
AN "AMERICAN" WITH GAS ENGINE



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If desired, it can be cut and threaded like steel pipe with standard pipe tools. It then makes up with any standard screw fitting. Or it can be welded or provided with flanges for other types of connections. In a word, it is *adaptable* to your conditions.

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4th and Townsend Streets - San Francisco, California
3251 Wilshire Boulevard - Los Angeles, California

NATURAL GASOLINE PLANTS BY STATES

OKLAHOMA (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Midco Oil Corp., Tulsa	Dewey	Comp.	*10,000
Midco Oil Corp., Tulsa	Drumright	Comp.	5,000
Midco Oil Corp., Tulsa	Oilton	Comp.	10,000
Mid-Continent Petroleum Corp., Tulsa	SE SE, Sec. 22-17-7	Absp.	12,000
Mid-Continent Petroleum Corp., Tulsa	E half NW, Sec. 5-16-15	Comp.	1,600
Mid-Continent Petroleum Corp., Tulsa	SE, Sec. 13-22-4w	Absp.	1,500
Mid-Continent Petroleum Corp., Tulsa	SW, Sec. 12-13-13	Absp.	1,200
Mid-Continent Petroleum Corp., Tulsa	NE SW, Sec. 15-10-8	Absp.	15,000
Mid-Continent Petroleum Corp., Tulsa	S half SE, Sec. 28-17-14	Comp.	500
Mid-Continent Petroleum Corp., Tulsa	W half NW, Sec. 17-9-8	Absp.	1,800
Mid-Continent Petroleum Corp., Tulsa	NW, Sec. 8-15-6	Absp.	1,200
Mid-Continent Petroleum Corp., Tulsa	NW, Sec. 28-20-12	Absp.	900
Mid-Kansas Oil & Gas Co., Thompson Bldg., Tulsa	Sec. 27-16-9, Creek County	C-A	8,000
Mid-Kansas Oil & Gas Co., Thompson Bldg., Tulsa	Sec. 22-13-14, Okmulgee County	Comp.	*4,000
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	Oilton	Absp.	2,000
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	Slick	Absp.	1,800
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	Terlton	Absp.	1,700
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	Terlton	Absp.	800
Neal Gasoline Co., Osage	Sec. 13-21-8	Absp.	3,100
Neal Gasoline Co., Copan	Sec. 33-28-13	Absp.	1,050
Oil State Gasoline Co., Tulsa	S half NE, Sec. 17-18n-13e	Comp.	3,000
Oil State Gasoline Co., Tulsa	S half S half W half NE Sec. 13-19n-5e, Payne County	Comp.	3,000
Oklahoma Gasoline Plants, Inc., Drumright	Sec. 18-18-7e	Absp.	8,000
Orfic Gasoline Production Co., Tulsa	Cleveland	Comp.	2,000
Peppers Gasoline Co., Enid	Enid	Absp.	5,000
Phillips Petroleum Co., Bartlesville	W half SW, Sec. 32-27-6, Osage County	Absp.	42,000
Phillips Petroleum Co., Bartlesville	NW SW, Sec. 32-11-2w, Oklahoma City	Absp.	40,000
Phillips Petroleum Co., Bartlesville	NW SW, Sec. 33-11-8, Seminole County	Absp.	37,500
Phillips Petroleum Co., Bartlesville	NE NE, Sec. 26-27-5, Osage County	Absp.	45,000
Phillips Petroleum Co., Bartlesville	SE NW, Sec. 24-11-11, Okfuskee County	Absp.	17,000
Phillips Petroleum Co., Bartlesville	NW NW, Sec. 23-7-6, Seminole County	Absp.	25,000
Phillips Petroleum Co., Bartlesville	S half, Sec. 1-11-3, Oklahoma County	Absp.	60,000
Phillips Petroleum Co., Bartlesville	SW NW, Sec. 12-25-11, Osage County	Absp.	3,000
Phillips Petroleum Co., Bartlesville	SE SE, Sec. 6-24-10, Osage County	Absp.	14,000
Phillips Petroleum Co., Bartlesville	SW NW, Sec. 32-8-8, Seminole County	Absp.	40,000
Phillips Petroleum Co., Bartlesville	N half NW, Sec. 3-9-9, Hughes County	Absp.	50,000
Powers, M. F., Depew	Sec. 8-15-8	Absp.	3,500
Powers, M. F., Hazel	Sec. 30-7-5	Absp.	4,000
Powers & Quinlan, Box 696, Beggs	SW SE, Sec. 2-14-12	Comp.	1,200
Powers & Quinlan, Box 696, Beggs	SW SE, Sec. 5-14-12	Comp.	300
Powers & Quinlan, Box 696, Beggs	Sec. 32-13-14	Comp.	600
Pure Oil Co., Drumright	Sec. 32-18n-7e	Comp.	4,000
Pure Oil Co., Oilton	Sec. 32-19n-7e	Comp.	4,000
Pure Oil Co., Healdton	Sec. 23-4s-3w	Comp.	1,100
Pure Oil Co., Depew	Sec. 5-15n-8e	Comp.	3,000
Pure Oil Co., Seminole	Sec. 26-9n-6e	Comp.	8,000
Pure Oil Co., Seminole	Sec. 14-8-6e	Comp.	5,000
Pure Oil Co., Seminole	Sec. 23-7-6e	Comp.	4,000
Reserve Petroleum Co., Box 328, Barnsdall	Barnsdall	Absp.	2,200
Reserve Petroleum Co., Box 428, Shamrock	Shamrock	Absp.	2,700
Sand Springs Home, Gasoline Department, Sand Springs	1½ mi. S Oilton, Sec. 4-18-7, Creek County	Comp.	3,000
Shell Petroleum Corp., Stroud	SE, Sec. 1-14n-6e	Absp.	5,000
Shell Petroleum Corp., Yale	NW, Sec. 18-19n-6e	Absp.	2,000
Shell Petroleum Corp., Drumright	NE, Sec. 8-17n-7e	Absp.	12,000
Shell Petroleum Corp., Mannford	NE, Sec. 18-19n-9e	Absp.	4,000
Shell Petroleum Corp., Maud	SE, Sec. 7-8n-5e	Absp.	20,000
Shell Petroleum Corp., Marshall	SE, Sec. 19-19n-4w	Absp.	30,000
Shell Petroleum Corp., Oklahoma City	NE, Sec. 30-11n-2w	Absp.	12,000
Shell Petroleum Corp., Seminole	SE, Sec. 16-8n-6e	Absp.	5,000
Signal Oil & Gas Co., Inc.	Bristow	Absp.	5,000
Silurian Oil Co., 704 Shell Bldg., St. Louis	Avant	Comp.	2,000
Sinclair Oil & Gas Co., Box 68, Cleveland	S half SW, Sec. 35-21-8	Comp.	4,000
Sinclair Oil & Gas Co., R.F.D. 1, Drumright	SW SW, Sec. 28-18-7	Comp.	9,000
Sinclair Oil & Gas Co., Box 578, Shamrock	SW SE, Sec. 28-17-7	Comp.	12,000
Sinclair Oil & Gas Co., Box 368, Covington	W half SW, Sec. 19-22-3	Absp.	20,000
Sinclair Oil & Gas Co., Box 398, Hominy	SW, Sec. 9-23-8	Comp.	4,000
Sinclair Oil & Gas Co., Box 6, Shidler	SW SE, Sec. 29-27-6	Absp.	30,000
Sinclair Oil & Gas Co., Box 365, Cromwell	NE, Sec. 4-10-8	Comp.	12,000
Sinclair Oil & Gas Co., Box 365, Seminole	NW NW, Sec. 35-9-6	Absp.	70,000
Sinclair Oil & Gas Co., Box 737, Seminole	SW NE, Sec. 10-8-6	Absp.	50,000
Sinclair Oil & Gas Co., Box 103, Pearson	SW, Sec. 24-7-4	Absp.	30,000
Sinclair Oil & Gas Co., Box 337, Capitol Hill, Oklahoma City	SE NW, Sec. 30-11-2	Absp.	50,000
Sinclair Oil & Gas Co., Box 297, Sasakwa	W half, Sec. 7-6-8	Comp.	20,000
Sinclair Oil & Gas Co., Box 1106, Seminole	NE NW, Sec. 19-9-6	Comp.	50,000
Sinclair Oil & Gas Co., Box 59, Route 1, Wewoka	SE SE, Sec. 5-7-7	Comp.	30,000
Skelly Oil Co., Box 168, Bristow	Range 8e, Creek County, G. W. Darby or J. G. Hardin Survey	Absp.	5,000
Skelly Oil Co., Box 577, Davenport	NE cor., SE NE, Sec. 2-14n-5e, Lincoln County	Absp.	5,000
Skelly Oil Co., Box 536, Seminole	SW NW, Sec. 6-9n-6e, Seminole County	C-A	35,000
Skelly Oil Co., Box 536, Seminole	SE NE, Sec. 1-9n-5e, Seminole County	Comp.	*10,000
Skelly Oil Co., Box 536, Seminole	SW, Sec. 17-9n-6e, Seminole County	Absp.	25,000
Skelly Oil Co., Box 157, Lyman	NW, Sec. 11-27n-5e, Osage County	Absp.	15,000
Skelly Oil Co., Maramec	NW SW NW, Sec. 15-20n-6e, Pawnee County	Absp.	5,000
Skelly Oil Co., Box 168, Slick	NW cor., Sec. 15-15n-10e, Creek County	Absp.	10,000
Skelly Oil Co., Box 168, Bristow	NW NW, Sec. 4-15n-9e, Creek County	Absp.	5,000
Skelly Oil Co., Box 413, Wynona	N half SW, Sec. 24-24n-9e, Osage County	Absp.	10,000
Southland Gasoline Co., Tulsa	Sec. 33-19-7, Creek County	Absp.	2,000
Southwest Production Co., Bristow	Sec. 20-16-9, Creek County	Comp.	3,000
Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago, Ill.	NE, Sec. 4-18n-7e, Creek County, 1½ mi. SE Oilton	Comp.	12,467
Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago, Ill.	NW, Sec. 29-18n-7e, Creek County, 1½ mi. NE Drumright	Comp.	.....

(Continued on next page)

AN IMPORTANT DATE

JUNE 4

On June 4 will be published the *Annual Pipe Line Number,* which is virtually a text book on pipe line practices, containing detailed maps of individual systems.

As a regular part of this issue will appear a Wall Map, 36″x48″, showing the transcontinental oil, gasoline and natural gas lines in the United States. Additional copies of this map will be available to those desiring it at $1 per copy. This is the first map ever published showing all gasoline pipe lines.

Despite the fact that additional copies are printed, we have never been able to meet the demand on us for copies of this issue. And so, if you are not a subscriber, and want to be sure of receiving it, we suggest that you enter your subscription on the coupon below and mail it to us.

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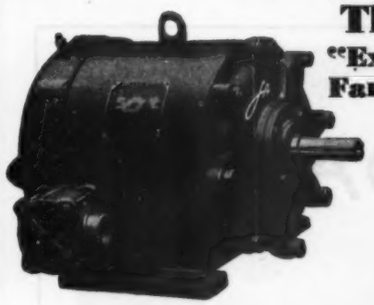

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WARNING: **Do not confuse Louis Allis "Explosion-Proof" motors and starters with non-approved so-called "vapor-proof" apparatus. Real "Explosion-Proof" motors and starters must pass severe explosion tests to be approved by Underwriters' Laboratories for use in Class I. Group D explosive atmospheres.**

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NATURAL GASOLINE PLANTS BY STATES

OKLAHOMA (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago, Ill.	NE, Sec. 21-17n-7e, Creek County, 2 mi. N Shamrock	Comp.	13,384
Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago, Ill.	SW, Sec. 34-18n-7e, Creek County, 2 mi. E Drumright	Comp.	18,150
Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago, Ill.	NE, Sec. 4-16n-7e, Creek County, 1¼ mi. S Shamrock	Comp.	4,581
Standard Oil Co. (Indiana), 910 S. Michigan Ave., Chicago, Ill.	NW, Sec. 29-18n-7e, Creek County, 1½ mi. N Drumright	Comp.	25,000
Stanolind Oil & Gas Co., Tonkawa	Tonkawa	Absp.	10,000
Star Gasoline Co., Sapulpa	Eram	Absp.	1,000
Sterling Oil & Gas Co., Tulsa	SE, Sec. 1-21-11	Absp.	250
Superior Oil Corp., 315 Exchange Nati. Bank Bldg., Tulsa	NW, Sec. 8-9-5	Comp.	8,500
Test Oil Co., Bartlesville	Sec. 30-27-13, Washington County	Comp.	*500
Texas Company, The (Delaware), Kiefer	Sec. 8-17n-12e, Creek County	Comp.	13,900
Texas Company, The (Delaware), Drumright	Sec. 16-17n-7e, Creek County	Comp.	11,000
Texas Company, The (Delaware), Haskell	Sec. 22-15n-14e, Okmulgee County	Comp.	6,900
Texas Company, The (Delaware), Oilton	Sec. 9-18n-7e, Creek County	Comp.	2,500
Texas Company, The (Delaware), Preston	Sec. 11-14n-12e, Okmulgee County	Comp.	1,500
Texas Company, The (Delaware), Davenport	Sec. 2-14n-5e, Lincoln County	Absp.	12,260
Texas Company, The (Delaware), Beggs	Sec. 22-15n-11e, Okmulgee County	Absp.	4,500
Texas Company, The (Delaware), McInnis	Sec. 30-25n-8e, Osage County	Absp.	5,000
Texas Company, The (Delaware), Jenks	Sec. 2-18n-12e, Tulsa County	Comp.	800
Tidal Refining Co., Philcade Bldg., Tulsa	Drumright	Absp.	20,000
Tidal Refining Co., Philcade Bldg., Tulsa	Glenpool	Absp.	15,000
Victor Gasoline Co., Box 1625, Drumright	Sec. 8-17-7	C-A	3,000
Victor Gasoline Co., Box 272, Bristow	Sec. 27-16-9	Absp.	5,000
Victor Gasoline Co., Box 272, Bristow	Sec. 8-16-8	Comp.	1,000
Victor Gasoline Co., Box 152, Davenport	Sec. 3-14-5	Absp.	850
Victor Gasoline Co., Box 397, Seminole	Sec. 10-9-6	Absp.	1,500
Victor Gasoline Co., Box 511, Seminole	Sec. 11-9-6	Absp.	5,000
Victor Gasoline Co., Box 397, Seminole	Sec. 5-7-7	Absp.	21,000
Warner-Caldwell Oil Co., Titusville, Pa.	Nowata	Comp.	2,500
Warner-Caldwell Oil Co., Titusville, Pa.	Nowata	Absp.	1,000
Warner-Caldwell Oil Co., Titusville, Pa.	Nowata	Comp.	500
Warner-Caldwell Oil Co., Titusville, Pa.	Nowata	Comp.	250
Wentz, L. H., Oil Division, Ponca City	Sec. 34-25n-1w	Absp.	10,000
Wentz, L. H., Oil Division, Ponca City	Sec. 17-28n-1e	Absp.	5,000
Western Gasoline Corp., Box 213, Tulsa	Sec. 24-17n-10e, Creek County, 1 mi. W of Kellyville	Absp.	4,500
Westoak Gasoline Co., Box 507, Sayre	SE SW, Sec. 21-9-23	Absp.	30,000
Wilcox, H. F., Oil & Gas Co., Tulsa	Sec. 2-15-8, Creek County, Bristow	Absp.	2,500
Wiser Oil Co., Bartlesville	Sec. 31-25-17e, Nowata County	Comp.	2,000
Wolverine Petroleum Corp., Avant	NE, Sec. 13-23n-11e	Comp.	1,500
Wolverine Petroleum Corp., Avant	E half, Sec. 24-24n-11e	C-A	6,500
Wolverine Petroleum Corp., Bartlesville	SE, Sec. 13-26n-12e	Comp.	2,000
Wolverine Petroleum Corp., Dillard	SW, Sec. 32-4s-2w	Absp.	5,000
Wright, J. H., estate, Sapulpa	Kellyville	Absp.	5,000
Wiser Oil Co., Sistersville, W. Va.	Sec. 31-25-17e, Nowata County.	Comp.	2,000

PENNSYLVANIA

Alum Rock Gas Co., Oil City	Ashland Twp.	Comp.	200
Atlas Oil Co., Clarion	Near Tylersburg	Comp.	350
Barbory & Hardt	Wildwood	Comp.	11
Bartoe, Harry T., Petrolia	Petrolia	Comp.	25
Bayliss & Fasenmeyer	Titusville, 2 mi. S	Comp.	1,000
Berry, Pryor	Petrolia	Comp.	25
Brown Clara L.	Kinzua	Comp.	100
Buzard Gas Co., Emlenton	Emlenton, 1 mi. E	Comp.	50
Carnahan, Charles E., and Lida M.	Tidioute, ½ mi. W	Comp.	500
Carnegie Natural Gas Co., Lone Pine	Washington County	Absp.	1,000
Carnegie Natural Gas. Co.	Mount Morris	Absp.	200
Carnegie Natural Gas Co., Waynesburg	Greene County	Absp.	4,500
Carpenter, M. A., Karns City	Fairview Twp.	Comp.	200
Chambers Oil Co.	.....	Comp.	150
Christie & Timblin	Evans City	Comp.	*25
Clinger Oil & Gas Co., Tidioute	Triumph Twp., Warren County	Comp.	500
Clinger Oil & Gas Co., Tidioute	Hastings Bridge, Forest County	Comp.	500
Cochran, John G., Sheffield	Sheffield	Absp.	1,100
Coffin, C. G.	Karns City	Comp.	180
Columbia Gas & Elec. Corp., McKinley	Elk County	Absp.	1,500
Columbia Gas & Elec. Corp., Majorville	West Twp.	Absp.	7,089
Columbia Gas & Elec. Corp., Waynesville	Franklin Twp.	Absp.	3,930
Columbia Gas & Elec. Corp., Heard	Finley Twp., West County	Absp.	2,550
Conquer, S. J.	Sheffield	Comp.	*80
Cook Oil Lease, Kelletville	Mayburg	Comp.	417
Daugherty, C. R., Y.M.C.A. Bldg., Butler	Herman, Butler County	Comp.	30
Daugherty, C. R., Y.M.C.A. Bldg., Butler	Petrolia, Butler County	Comp.	10
Daugherty, C. R., Y.M.C.A. Bldg., Butler	Oakdale, Allegany County	Comp.	90
Dempseytown Gas Co., Oil City	Clarion	Comp.	50
Dunlap, Harry G., Chicora	Chicora, 1 mi. W	Comp.	11
Edwards, E. A., Titusville	Titusville	Comp.	170
Elswerth, Hefron & Co.	Lucinda	Comp.	400
Ellenberger, W. J., & Sons	.....	Comp.	300
Elliott Bros.	Chicora	Comp.	500
Equitable Gas Co., Rogersville	¼ mi. E of Rogersville	Absp.	3,000
Equitable Gas Co., R.F.D. 1, Clarksville, Pa.	5 mi. SE Marianna	Absp.	2,000
Federal Oil & Gas Co., McDonald	McDonald	Comp.	100
Fleming, J. E., Titusville	Grand Valley, Warren County	Comp.	500
Forest Chemical Co.	Barnes	Absp.	300
Forest Oil & Gas Co., Clinton	Clinton, 3 mi. N	Comp.	300
Gamble, James	Karns City, 1½ miles E	Comp.	75
Gould, Mrs. J. S.	Butler, 3½ mi. S	Comp.	100
Gould, Nancy E., & Son, R.F.D. 6, Butler	Penn Twp.	Comp.	15
Grandin, Clinger-Bell & Jennings, Tidioute	Triumph Twp.	Comp.	250
Hadden, James B., Sheffield	Henry's Mill	Comp.	84
Hague & Co.	Tidioute	Comp.	500
Haskell & Bayliss	Emlenton, 4 mi. E	Comp.	150
Haskell & Dunham, Pleasantville	Southwest Twp., Warren County	Comp.	100
Haskell, Roth & Bayliss, Tidioute	Tidioute, 1 mi. SW	Comp.	1,000
Hazelwood Oil Co., Petrolia	Sheffield, S.	Comp.	500
Hickey & Rieg, Clarendon	Henry's Mill	Comp.	200
Hunter, Livingston L. Trust, Tidioute	Trunkeyville, Forrest County	Comp.	*300
Jackson, Fred W.	Chicora	Comp.	360

(Continued on Next Page)

NATURAL GASOLINE PLANTS BY STATES

PENNSYLVANIA (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Jennings, E. H., Bros. Co., 608 Columbia Bldg., Pittsburgh	Fayette Twp., Allegheny County	Comp.	1,000
Jennings, E. H., Bros. Co., 608 Columbia Bldg., Pittsburgh	Fayette Twp., Allegheny County	Comp.	150
Johnson, C. H., and H. G. Dunlap	Chicora	Comp.	60
Johnson & Myers Bros., Tidioute	Tidioute Field	Comp.	175
Kapp & Brocklehurst, Tidioute	Tidioute	Comp.	200
McMeekin, Chas. T., Karns City	Karns City, 1½ mi. SW	Comp.	50
Mars Oil Co., Oil City	Clarion, 2 mi. NW	Absp.	*1,800
Mars Oil Co., Oil City	Lewis Run	C-A	6,500
Mars Oil Co., Oil City	Oil City, 10 mi. E	C-A	4,000
Mars Oil Co., Oil City	Oil City, 10 mi. SE	C-A	7,500
Martin, Orie L.	Butler, 4 mi. S	Comp.	8
Master & Hess, Inc.	Fern, 1 mi. W	Comp.	100
Midland Oil Co., Petroleum Center	Petroleum Center	Comp.	1,200
Miller Gould & Co., Butler	6 mi. from Butler	Comp.	19
Miller & Marshall	Karns City, 1½ mi.	Comp.	25
Montgomery, James, R.F.D. 1, McCoy Road	McKee's Rocks	Comp.	100
Moore, Way & Harrison	Titusville, 7 mi. N	Comp.	150
Myers Bros. & Hazzard	Tidioute, 1 mi. N	Comp.	100
National Gasoline Co.	Grand Valley	Comp.	250
National Gasoline Co.	West Hickory	Comp.	250
North Penn Gas Co., 103 Mill St., Port Allegany	Sharon, Potter County	Absp.	*400
O'Hara, Sarah C., 218 E. North St., Butler	Fairview Twp.	Comp.	100
Ostrander & Daugherty, Petrolia	Petrolia	Comp.	30
Parker, H. R., Chicora	Donegal and Oakland Townships, Butler	Comp.	125
Pennsylvania Fuel Supply Co.	Clarion	C-A	*800
Pennsylvania Oil Co.	Sheffield	C-A	10,000
Pequignot, E. O., Tidioute	West Hickory N.	Comp.	*500
Pequignot, E. O., Tidioute	Forest City	Comp.	*100
Pequignot, E. O., Tidioute	Harmony Twp., Forest County	Comp.	*200
Pequignot, E. O., Tidioute	Webber farm, Forest County	Comp.	*100
Pioneer Oil Co., Pioneer	Pioneer	Comp.	600
Porter Bros., Catfish	Catfish, 1 mi. E	Comp.	100
President Oil Co., Emlenton	Bruin, 2 mi. W	Comp.	50
President Oil Co., Emlenton	Emlenton, 2 mi. SW	Comp.	50
President Oil Co., Emlenton	Fryburg, 6 mi. N	Comp.	500
Price, Harry D., Renfrew	Butler Twp., Butler County	Comp.	25
Ramage, S. Y.	Tidioute	Comp.	20
Red Brush Oil Co., Tionesta	6 mi. S Tionesta	Comp.	300
Riddle Farm Oil Co., Karns City	½ mi. S Karns City	Comp.	50
Ritzert Bros., Chicora	Chicora	Comp.	70
Say, George K.	Petrolia	Comp.	40
Sherwin, Wm. E., Karns City	Karns City, ½ mi. S	Comp.	15
Sloan & Zook Co., Kane	Kane	Absp.	1,500
Southern Oil Co., Clarion	Clarion County	Comp.	150
Southern Oil Co., Miola	Clarion County	Comp.	150
Southern Oil Co., Elmo	Clarion County	Comp.	150
Southern Oil Co., Pleasantville	Venango County	Comp.	150
Southern Oil Co., Volant	Lawrence County	Comp.	50
Southern Oil Co., Butler	Butler County	Comp.	50
South Penn Oil Co., Pittsburgh	Badon	Comp.	35
South Penn Oil Co., Pittsburgh	Bradford	Comp.	325
South Penn Oil Co., Pittsburgh	Chicora	Comp.	75
South Penn Oil Co., Pittsburgh	Chicora	Comp.	5
South Penn Oil Co., Pittsburgh	Chicora	Comp.	150
South Penn Oil Co., Pittsburgh	Evans City	Comp.	250
South Penn Oil Co., Pittsburgh	Guffey	Comp	60
South Penn Oil Co., Pittsburgh	Henry's Mill	Comp.	150
South Penn Oil Co., Pittsburgh	Kane	Comp.	150
South Penn Oil Co., Pittsburgh	McDonald	Comp.	1,200
South Penn Oil Co., Pittsburgh	New Freeport	Absp.	750
South Penn Oil Co., Pittsburgh	Noblestown	Comp.	650
South Penn Oil Co., Pittsburgh	North Sheffield	Comp.	450
South Penn Oil Co., Pittsburgh	Parker's Landing	Comp.	80
South Penn Oil Co., Pittsburgh	President	Comp.	325
South Penn Oil Co., Pittsburgh	Tiona	Comp.	250
South Penn Oil Co., Pittsburgh	Truemans	Comp.	350
South Penn Oil Co., Pittsburgh	Van	Comp.	350
South Penn Oil Co., Pittsburgh	Wildwood	Comp.	100
Stephens, W. J., Grand Valley	Grand Valley	Comp.	100
Success Oil Co., Pioneer	Petroleum Center, W	Comp.	1,500
Surety Oil Co., Inc., Titusville	2½ mi. S Titusville	Comp.	1,000
Tarbell & Co., Grand Valley	2 mi. from Grand Valley	Comp.	80
Thomas, R. L., Tidioute	Triumph Twp., Warren County	Comp.	250
Tompsett Brothers, Tidioute	Tidioute, 1 mi.	Comp.	275
Veach, George, Tidioute	5 mi. S Tidioute	Absp.	500
Veach Oil Co., Oil City	Trunkeyville	Comp.	30
Vogebacker, A. J. and J. E.	Lucinda	Comp.	42
Wahl, A. R., Evans City	Wahl farm, Forward Twp.	Comp.	165
Warner, C. W.	Titusville, 6 mi. S	Comp.	30
Warner-Caldwell Oil Co., Titusville	Titusville	Comp.	2,000
Wheeler, D. H., Box 86, Petrolia	Petrolia, 1½ mi. SE	Comp.	200
Will, Jacob W., McDonald	Canonsburg	Comp.	55

TEXAS

Airolene Gasoline Corp., Shamrock	Sec. 9, Blk. 27, H.&G. N.R.R. Sur., Wheeler County	Absp.	6,500
Amerada Petroleum Corp., Drawer C, Fry	Chas. Betts Sur. No. 625, Brown County	Absp.	6,000
Arab Gasoline Corp., Eastland	Sec. 17, Blk. 4, H.&T.C. Ry. Sur., Eastland County	Absp.	25,000
Barker & Goforth	Ranger, 5 mi. W	Absp.	*1,000
Bell Oil & Gas Co.	Borger	Absp.	25,000
Bell Oil & Gas Co., Burkburnett	Burkburnett	Absp.	23,000
Big Lake Oil Co., Texon	Big Lake Field at Texon, University lease, Sec. 2, Blk. 3, Reagan County	Absp.	50,000
Breckenridge Gasoline Co., Breckenridge	Breckenridge	Absp.	12,000
California United Gasoline Corp., Coleman	Overall ranch	C-A	10,000
California United Gasoline Corp., Coleman	Weaver ranch	C-A	10,000
Canadian River Gas Co., Independence, Kans.	Sec. 33, Blk. P, Mc., E.L. R.R. Sur., Moore County	Absp.	10,000
Cannon Gasoline Co., Box 963, Amarillo	2½ mi. N Amarillo	Absp.	5,000
Coltexo Corp., Lefors	Sec. 2, A.C.H.&B. Sur., Gray County	Absp.	40,000
Coltexo Corp., Lefors	Sec. 1, H.&G.N., Blk. B-2, Gray County	Absp.	40,000
Coltexo Corp., Lefors	B.&B. Sur. 2, Gray County	Absp.	20,000
Columbian Gasoline Corp., Shamrock	Sec. 46, H.&G.N., Blk. 17, Wheeler County	Absp.	10,000
Consolidated Gasoline Co., Eastland	Eastland, 2 mi. SW	Absp.	16,000
Continental Oil Co., Wichita Falls	C. Winters Sur., Wichita County	Comp.	2,000
Continental Oil Co., Wichita Falls	C. Winters Sur., Wichita County	Comp.	*700
Empire Oil & Refining Co., Pampa	NE. Sec. 152, Blk. 3, Gray County	Absp.	30,000
Empire Oil & Refining Co., Pampa	NE. Sec. 136, Blk. 3, Gray County	Absp.	(*)

(Continued on next page)

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VALVES

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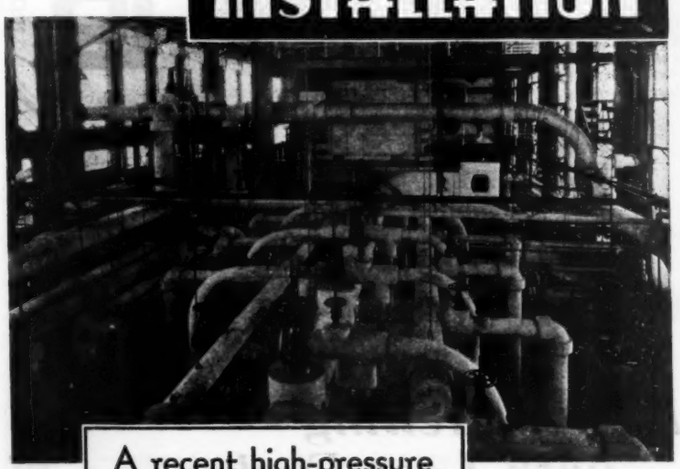
INSTALLATION



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OAKITE

Industrial Cleaning Materials and Methods

NATURAL GASOLINE PLANTS BY STATES

TEXAS (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Empire Oil & Refining Co., Borger	NE, Sec. 19, Blk. Y, Hutchinson County	Char.	(*)
Graham Oil & Gas Co., Graham	Morrison farm	Absp.	8,000
Gulf Production Co., Breckenridge	Breckenridge, 1½ mi. N	Absp.	12,660
Gulf Production Co., Breckenridge	Breckenridge, 8 mi. S	Absp.	8,040
Gulf Production Co., Burkburnett	Burkburnett, 1 mi. N	Comp.	3,360
Gulf Production Co., Eastland	Eastland, 2 mi. W	Absp.	8,650
Gulf Production Co., Electra	Electra	Comp.	1,998
Gulf Production Co., Eliasville	Eliasville, 1 mi.	Absp.	4,100
Gulf Production Co., Ranger	Ranger, 3 mi. N	Absp.	9,325
Hanlon Gasoline Co., Breckenridge	3 mi. SE Breckenridge	Absp.	25,000
Hanlon Gasoline Co., Breckenridge	6 mi. SE Breckenridge	Absp.	20,000
Hanlon Gasoline Co., Eliasville	Eliasville	Absp.	20,000
Henderson, F. C., Inc., 818 McBirney Bldg., Tulsa	Sanford	Absp.	36,000
Huber Petroleum Co., Box 278, Borger	Sec., A.&B. Sur.	Absp.	33,000
Humble Oil & Refining Co., Rising Star	Brown County	Absp.	12,000
Humble Oil & Refining Co., Iraan	Pecos County	Absp.	25,000
Humble Oil & Refining Co., Corsicana	Navarro County	Absp.	20,000
Humble Oil & Refining Co., Luling	Caldwell County	Absp.	12,000
Humble Oil & Refining Co., Jacksonville	Anderson County	Absp.	20,000
Humble Oil & Refining Co., Bellville	Austin County	Absp.	12,000
La Salle Petroleum Co., Tulsa	Burkburnett	Comp.	10,000
Lone Star Gas Co., Petrolia	3 mi. S Petrolia	Absp.	15,000
Lone Star Gas Co., Gainesville	2½ mi. W Gainesville	Absp.	*15,000
Lone Star Gas Co., Gordon	3 mi. E Gordon	Absp.	25,000
Lone Star Gas Co., Brazos	3 mi. E Brazos	Absp.	*15,000
Lone Star Gas Co., Desdemona	6 mi. SE Desdemona	Comp.	2,000
Lone Star Gas Co., Box 488, Ranger	9 mi. S Ranger	Comp.	8,000
Lone Star Gas Co., Box 882, Ranger	7 mi. NE Ranger	Comp.	2,000
Lone Star Gas Co., R.F.D. 1, Cisco	7 mi. SE Moran	Absp.	*5,000
Lone Star Gas Co., Sipes Springs	8 mi. from Rising Star	Comp.	1,000
Lone Star Gasoline Co., Box 788, Ranger	Ranger (4)	Absp.	82,000
Lone Star Gasoline Co., Box 788, Ranger	Eastland	Absp.	6,500
Lone Star Gasoline Co., Box 788, Ranger	Olden	Absp.	8,500
Lone Star Gasoline Co., Drawer 00, Breckenridge	Breckenridge	Absp.	31,000
Magnolia Petroleum Co., Burkburnett	J. G. Hardin farm, 1 mi. NW Burkburnett, Wichita County	Comp.	4,250
Magnolia Petroleum Co., Electra	Sec. 17, Blk. 13, H.&T.C. Ry. Co. Sur., Wilbarger County	Comp.	4,500
Magnolia Petroleum Co., Olden	R. S. Harris farm, Matt Finch Sur., Eastland County	Absp.	9,000
Magnolia Petroleum Co., Breckenridge	SE, Sec. 13 LAL, Stephens County	Absp.	6,250
Magnolia Petroleum Co., Desdemona	Caruth farm, Smelzer Sur., Eastland County	Absp.	7,500
Magnolia Petroleum Co., Pampa	NE, Sec. 32, Blk. 3, I.& G.N. Ry. Sur., Gray County	Absp.	4,250
Magnolia Petroleum Co., Le Fors	Sec. 30, Blk. B-2, H.&G. N. Ry. Sur., Gray County	Absp.	15,000
Magnolia Petroleum Co., Skellytown	Sec. 91, Blk. 4, I.&G.N. Ry. Sur., Carson County	Absp.	3,500
Magnolia Petroleum Co., Lela	NE, Sec. 39, Blk. 24, H. &G.N. Sur., Wheeler County	Absp.	2,000
Mid-Kansas Oil & Gas Co., Thompson Bldg., Tulsa	J. W. Hill lease, Stephens County, Eliasville	Absp.	7,000
Mid-Kansas Oil & Gas Co., Thompson Bldg., Tulsa	Tullos lease, Stephens County, Eliasville	Absp.	12,000
Mid-Kansas Oil & Gas Co., Thompson Bldg., Tulsa	Dabney lease, M. Salinas Sur., Eastland County	Absp.	*2,000
Midland Gasoline Co.	Coleman	Absp.	20,000
National Supply Co. of Texas, Box 552, Shamrock	SE, Sec. 41, Blk. 24, Wheeler County	Absp.	10,000
Ockland Gasoline Production Co., Tulsa	Desdemona	Absp.	4,000
Omar Gasoline Co., Wichita Falls	NW of Burkburnett	Comp.	11,500
Orfie Gasoline Production Co. of Texas, 508 McBirney Bldg., Tulsa	Desdemona	Comp.	4,000
Phillips Petroleum Co., Breckenridge	W central part G. Green farm, SE, Sec. 8, T.& P. R.R. Sur., Blk. 5, Stephens County	Absp.	15,000
Phillips Petroleum Co., Borger	NE SE, Sec. 21, Blk. Y, A.&B. Sur., Hutchinson County	Absp.	40,000
Phillips Petroleum Co., Bowers	W half, Sec. 62, H.&G.N. Sur., Blk. B-2, Gray County	Absp.	60,000
Phillips Petroleum Co., Canadian	NW SE, Sec. 1, Blk. X02, Hutchinson County	Absp.	75,000
Phillips Petroleum Co., Carson	W central, Sec. 115, I.& G.N. Sur., Blk. 5, Carson County	Absp.	20,000
Phillips Petroleum Co., Eliasville	6.88 ac. N half, Sur. 1,174 T.E.&L., Stephens County	Absp.	12,000
Phillips Petroleum Co., Frankell	5 ac., SE SW, Sec. 51, T.&P. Sur., Blk. 6, Stephens County	Absp.	5,500
Phillips Petroleum Co., Gorman	SE cor. Thos. Mulryne Sur. A377, H. & T. C., Blk. 1, Eastland County	Absp.	12,000
Phillips Petroleum Co., Gray	E half, Sec. 32, H.&G.N. Sur., Blk. 2, Gray County	Absp.	100,000
Phillips Petroleum Co., Helios	W central part W. A. Eaken 132-ac. tract, Eastland County	Absp.	15,000
Phillips Petroleum Co., Herron City	SE, Sec. 20, P. J. Humphrey Sur. A-153, Young County	Absp.	9,000
Phillips Petroleum Co., Hoherts	12 ac., Sec. 63, Blk. 4, T.&P.R.R. Sur., Stephens County	Absp.	5,000
Phillips Petroleum Co., Ibex	NW, Sec. 28, B. AL. Shackelford County	Absp.	45,000
Phillips Petroleum Co., Johnson	Cen. 60 ac., S half, Sec. 69, Blk. 46, H.&T.C. Sur., Hutchinson County	Absp.	50,000
Phillips Petroleum Co., Judkins	W 60 ac., N half S half, Sec. 1, University land, Blk. 35, Ector County	Absp.	15,000
Phillips Petroleum Co., Le Fors	NE NE, Sec. 56, Blk. 25, H.&G.N. Sur., Gray County	Absp.	15,000
Phillips Petroleum Co., McCamey	NE NE, Sec. 216, C.C.S. D.&R.G.N.G.R.R. Sur., Blk. F, Crane County	Absp.	75,000
Phillips Petroleum Co., Necessity	SW cor. B. F. Satterwhite 200-ac. tract, Blk. 15, T.&P.R.R. Sur., Blk. 6, Stephens County	Absp.	2,500
Phillips Petroleum Co., North	SW, Sec. 35 and NW, Sec.		

(Continued on next page)

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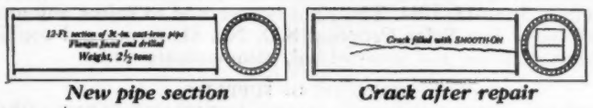

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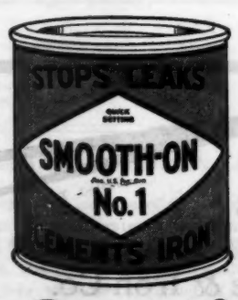

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COLUMBUS, OHIO

NATURAL GASOLINE PLANTS BY STATES

TEXAS (Continued)

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
	36, I.&G.N. Sur., Blk. 3, Gray County	Absp.	90,000
Phillips Petroleum Co., Oil City	20 ac., SE cor. R. D. Owens Sur. A-2,249, Young County	Absp.	7,500
Phillips Petroleum Co., Olney	17.61 ac., T.E.&L. Sur., Blk. 2,403, Archer County	Comp.	10,000
Phillips Petroleum Co., Pampa	W half SW, Sec. 88, H.& G.N. Sur., Blk. B-2, Gray County	Absp.	45,000
Phillips Petroleum Co., Panhandle	SW, Sec. 113, I.&G.N.R.R. Sur., Blk. 5, Carson County	Absp.	15,000
Phillips Petroleum Co., Pantex	SE cor. Mary Whitley Sur., Blk. 8, Hutchinson County	Absp.	50,000
Phillips Petroleum Co., Phildan	NW SE, Sec. 88, Blk. B-2, H.&G.N. R.R. Sur., Gray County	Comp.	20 000
Phillips Petroleum Co., Rockcreek	N half NW, Sec. 22, Blk. Y, A.&B. Sur., Hutchinson County	Absp.	45,000
Phillips Petroleum Co., Roeser	SW SW, Sec. 17, T.&P. R. R. Sur., Blk. 5, Stephens County	Absp.	12,000
Phillips Petroleum Co., South Bend	20 ac., N centr. J. Garrett Sur. A-108, Young County	Absp.	3,000
Phillips Petroleum Co., Sanford	Sec. 31, Blk. 46, H.&T.C. R.R. Sur., Hutchinson County	Absp.	20,000
Phillips Petroleum Co., Texroy	SE, Sec. 3, Blk. B-3, D.& S.E. R.R. Sur., Hutchinson County	Absp.	45,000
Philmore Gasoline Corp., Box 128, Bryson	Bryson Pool, E half J. M. Daugherty 150 ac., Isaac Hughson Sur., Jack County	Absp.	14,000
Pure Oil Co., Van	Van Zandt County	Comp.	39,000
Red River Oil Co., Box 712, Tulsa	Electra	Comp.	5,000
Roeser & Pendleton, Inc., Fort Worth	Cook ranch, Shackelford County, 7 mi. NW Albany	Absp.	25,000
Roeser & Pendleton, Inc., Fort Worth, Tex.	Reynolds Ranch, Shackelford Co., 5 mi. west Albany	Absp.	*10,000
Shell Petroleum Corp., Pampa	SW Sec. 83, Blk. 3, I.& G.N. Sur.	Absp.	10,000
Shell Petroleum Corp., Pampa	SE, Sec. 107, Blk. 5, I.& G.N. Sur.	Absp.	15,000
Signal Gasoline Co. of Texas	Best, Reagan County	Absp.	30,000
Signal Gasoline Co. of Texas, Box 157, Best	Best, Reagan County	Absp.	30,000
Skelly Oil Co., Box 178, Stinnett	NW cor. J. W. Proctor Sur., Moore County	Absp.	7,000
Skelly Oil Co., Box 952, Burkburnett	G. W. Darby or J. G. Hardin Sur., Waggoner County	Comp.	7,000
Skelly Oil Co., Box 127, Skellytown	NE, Sec. 174, Blk. 3, Gray County	Absp.	15,000
Skelly Oil Co., Box 336, Whittenburg	NW, Sec. 5, Blk. Y, Hutchinson County	Char.	*4 000
Skelly Oil Co., Box 336, Whittenburg	SW NW SW, Sec. 11, Blk. Y, Hutchinson County	Char.	12,000
Skelly Oil Co., Box 336, Whittenburg	NW NW, Sec. 20, Blk. Y, Hutchinson County	Char.	15,000
Skelly Oil Co., Box 336, Whittenburg	SW, Sec. 4, Blk. B-4, D.& S.E. Ry. Sur., Hutchinson County	Absp.	30,000
Skelly Oil Co., Box 336, Whittenburg	SW SE, Sec. 6, Blk. Y, Hutchinson County	Absp.	15,000
Skelly Oil Co., Box 952, Burkburnett	H.T.&B.R.R. Sur. A-124, Wichita County	Comp.	5,000
Skelly Oil Co., Box 127, Skellytown	S half, Sec. 88, Blk. 4, I.&G.N. R.R. Sur., Carson County	Absp.	35,000
Skelly Oil Co., Box 127, Skellytown	NW cor., Sec. 86, Blk. 4, I.&G.N. Sur., Carson County	Char.	18,000
Southern Gasoline Co., Ranger	Tiffin	Absp.	2,500
South Plains P. L. Co., Independence, Kans.	10 mi. NE Amarillo, Sec. 45, Blk. 2, A.B.&M. Sur.	Absp.	3,000
Stanolind Oil & Gas Co., Desdemona	Desdemona	Comp.	10.000
Stanolind Oil & Gas Co., Burkburnett	Burkburnett	Comp.	12,000
Stanolind Oil & Gas Co., Desdemona	Desdemona	Absp.	10,000
Texas Company, The (Delaware), Electra	½ mi. NW Electra, Wichita County	Comp.	9,300
Texas Company, The (Delaware), Burkburnett	3 mi. NW Burkburnett, Wichita County	Comp.	33,000
Texas Company, The (Delaware), Olney	2½ mi. NE Olney, Archer County	Comp.	7,000
Texas Gasoline Co., Desdemona	1½ mi. from Desdemona	Absp.	2,000
Texas Pacific Coal & Oil Co., Fort Worth	Caddo	Absp.	15,000
Texas Pacific Coal & Oil Co., Fort Worth	Strawn	Absp.	8,000
Texas Pacific Coal & Oil Co., Fort Worth	Eliasville	Absp.	15,000
Texas Pacific Coal & Oil Co., Fort Worth	Caddo	Absp.	10,000
Tidal-Western Oil Corp., Tulsa	Burkburnett	Comp.	15,000
Vollwin Gasoline Co., 1325 Glenarm St., Denver	McCleskey farm, Frankell	Absp.	1,500
Waggoner Refining Co., Electra	Electra	Absp.	5,000
Waggoner Refining Co., Electra	Vernon	Absp.	13,000
Ward Gasoline Co., Breckenridge	7 mi. N Breckenridge	Absp.	8,000
Western Oil Corp. of Texas, Box 216, Electra	4 mi. SE Electra	Absp.	8,000
Wilcox, H. F., Oil & Gas Co., Tulsa	Sec. 62, Blk. 3, I.G.N. Sur., Pampa	Absp.	1,500

WEST VIRGINIA

American Oil Development Co., Pittsburgh, Pa	Tyler County	Absp.	1,500
American Oil Development Co., Pittsburgh, Pa.	Tyler County	Comp.	250
American Oil Development Co., Pittsburgh, Pa.	Pleasants County	Comp.	200
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.	Clendenin	Absp.	2,000
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.	Hastings	Comp.	1,000
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.	Diamond	Comp.	2,500
Carnegie Natural Gas Co., Hundred	Hundred	Absp.	3,300
Carnegie Natural Gas Co., Pine Grove	Pine Grove	Absp.	3,000
Carnegie Natural Gas Co., Underwood	Underwood	Absp.	3,000
Carnegie Natural Gas Co., Woodruff	Woodruff	Absp.	1,800
Carnegie Natural Gas Co., Toll Gate	Ritchie County	Absp.	....
Casto Oil Co., St. Marys	Union district	Comp.	250
Chemical Oil & Gas Co., Big Bend	Grantsville	C-A	500
Cumberland & Allegheny Gas Co.	Jane Lew, 3 mi. S	Absp.	3,000
Dinsmoor & Co., St. Marys	Pleasants County	Comp.	500
Dun Mar Oil & Gas Co., Route 3, Fairview	Jarke Run	Comp.	50
Falling Rock Cannel Coal Co.	Weir	Absp.	3,000
Federal Oil & Gas Co., Elizabeth	Elizabeth, S.	Comp.	250
Federal Oil & Gas Co., Weston	Weston, 3 mi.	Comp.	500
Hapgood, Roswell T., & Co., Charleston	Cedar Grove	Char.	3,000
Henighan & Hanlon, Sistersville	Doddridge County	Comp.	200
Hope Construction & Refining Co.	Barren Creek	Absp.	12,000

(Continued on Next Page)

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The OIL and GAS JOURNAL
TULSA, OKLA.

NATURAL GASOLINE PLANTS BY STATES

WEST VIRGINIA (Continued)

Company and plant address—	Field location—	Type of plant	Daily capy (gals.)
Hope Construction & Refining Co.	Bristol	Absp.	8,000
Hope Construction & Refining Co.	Ellenboro	Absp.	700
Hope Construction & Refining Co.	Farmington	Absp.	15,000
Hope Construction & Refining Co.	Littleton	Absp.	15,000
Hope Construction & Refining Co.	Middlebourne	Comp.	400
Hope Construction & Refining Co.	Mount Clare	Absp.	2,500
Hope Construction & Refining Co.	Pine Grove	Absp.	40,000
Hope Construction & Refining Co.	Rachel	Absp.	10,000
Hope Construction & Refining Co.	Salem	Absp.	2,400
Hope Construction & Refining Co.	Sistersville	Absp.	400
Hope Construction & Refining Co.	Sistersville	Comp.	1,500
Hope Construction & Refining Co.	Sistersville	Comp.	1,000
Hope Construction & Refining Co.	Spencer	Absp.	1,000
Hope Construction & Refining Co.	Waverly	Absp.	5,000
Huntington Development & Gas Co.	Hubball	Char.	12,000
Jennings Oil Co., 608 Columbia Bldg., Pittsburgh	Wetzel County	Comp.	100
Kanawha Oil Co., 608 Columbia Bldg., Pittsburgh	Wetzel County	C-A	1,000
Kanawha Oil Co., 608 Columbia Bldg., Pittsburgh	Wetzel County	Comp.	100
Manufacturers Light & Heat Co., Rosbys Rock	Clay Township	Absp.	1,740
Manufacturers Light & Heat Co., Porters Falls	Green Township	Absp.	4,540
Melrose Oil & Gas Co.	Middlebourne	Comp.	35
Melrose Oil & Gas Co.	Middlebourne	Comp.	25
Melrose Oil & Gas Co.	Middlebourne	Comp.	25
National Compressing Co., Parkersburg	Rutherford, Ritchie County	Comp.	50
New York Petroleum Co., Box 563, Parkersburg	Ritchie County	Comp.	150
New York Petroleum Co., Box 563, Parkersburg	Tyler County	Comp.	150
Ohio Fuel Oil Co., Stoffel	Elk district	Absp.	1,000
Ohio Fuel Oil Co., Charleston	Blue Creek	Comp.	1,050
Ohio Fuel Oil Co., Charleston	Schroeder	Comp.	2,400
Oil & Gas Co., 318½ Juliana St., Parkersburg	Ritchie County	Comp.	300
Owens, Libbey-Owens Gas Dept., Charleston	South Malden, Kanawha County	Absp.	10,000
Pittsburgh & West Virginia Gas Co., Hundred	Wetzel County, 1 mi. N Hundred	Absp.	3,000
Pure Oil Co., Dawes	Kanawa County	Comp.	9,000
Reno Oil Co., Sistersville	Tyler County	Comp.	225
Reno Oil Co.	Tyler County	Comp.	47
Reno Oil Co.	Tyler County	Comp.	62
Reno Oil Co.	Ritchie County	Comp.	53
Reno Oil Co.	Ritchie County	Comp.	145
Reno Oil Co.	Ritchie County	Comp.	120
Reserve Gas Co., Pittsburgh, Pa.	Kennedy plant near Weston	Absp.	20,000
Southern Oil Co., Sistersville	Ellsworth, Tyler County	Comp.	150
Southern Oil Co., Porters Falls	Green Twp., Wetzel County	Comp.	100
Southern Oil Co., Eureka	Jefferson, Pleasants County	Comp.	*100
Southern Oil Co., McFarlan	Murphy, Ritchie County	Absp.	*1,500
South Penn Oil Co., Pittsburgh, Pa.	Alvy	Comp.	1,200
South Penn Oil Co., Pittsburgh, Pa.	Beall's Mills	Comp.	200
South Penn Oil Co., Pittsburgh, Pa.	Blue Creek	Comp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Blue Creek	Comp.	1,800
South Penn Oil Co., Pittsburgh, Pa.	Bula (near Wana)	Comp.	350
South Penn Oil Co., Pittsburgh, Pa.	Charleston	Char.	2,800
South Penn Oil Co., Pittsburgh, Pa.	Clay	Comp.	750
South Penn Oil Co., Pittsburgh, Pa.	Coco	Comp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Fink (west of Churchville)	Comp.	300
South Penn Oil Co., Pittsburgh, Pa.	Glenville	Comp.	700
South Penn Oil Co., Pittsburgh, Pa.	Macfarlan	Comp.	1,200
South Penn Oil Co., Pittsburgh, Pa.	Mannington	Comp.	800
South Penn Oil Co., Pittsburgh, Pa.	Metz	Comp.	600
South Penn Oil Co., Pittsburgh, Pa.	Middlebourne	Comp.	250
South Penn Oil Co., Pittsburgh, Pa.	Middlebourne	Comp.	50
South Penn Oil Co., Pittsburgh, Pa.	Middlebourne	Comp.	150
South Penn Oil Co., Pittsburgh, Pa.	Pine Grove	C-A	1,500
South Penn Oil Co., Pittsburgh, Pa.	Shinnston	Comp.	50
South Penn Oil Co., Pittsburgh, Pa.	Shirley	Comp.	600
South Penn Oil Co., Pittsburgh, Pa.	Shirley	Comp.	500
South Penn Oil Co., Pittsburgh, Pa.	Shirley	Comp.	800
South Penn Oil Co., Pittsburgh, Pa.	Smithfield	Comp.	2,000
South Penn Oil Co., Pittsburgh, Pa.	Spencer	Comp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Statler Run	C-A	1,700
South Penn Oil Co., Pittsburgh, Pa.	Walton	Comp.	1,100
South Penn Oil Co., Pittsburgh, Pa.	Walton	Comp.	300
South Penn Oil Co., Pittsburgh, Pa.	Wolf Summit	Comp.	1,400
South Penn Oil Co., Pittsburgh, Pa.	Yawkey	Comp.	2,600
Sutton Bros., Inc., Steubenville, Ohio	Hancock County	Comp.	*100
Tuel & Thoenen, Sistersville	Sisterville (3)	Comp.	600
Tyler Oil Co., Sistersville	Tyler County	Comp.	40
Tyler Oil Co., Sistersville	Tyler County	Comp.	21
Tyler Oil Co., Sistersville	Tyler County	Comp.	36
Viking Gasoline Corp., Charleston	Morgantown	Char.	1,000
Viking Realty Co., Martha	Cabell County	Char.	1,000
Virginian Gasoline & Oil Co., Sandyville	Jackson County	Char.	40,000
Virginian Gasoline & Oil Co., Ona	Cabell County	Absp.	*18,000
Virginian Gasoline & Oil Co., Charleston	Kanawha County	Char.	25,000
Virginian Gasoline & Oil Co., Clendenin	Kanawha County	Absp.	40,000
Virginian Gasoline & Oil Co., Charleston	Kanawha County	Char.	2,000
Virginian Gasoline & Oil Co., Spencer	Roane County	Char.	12,000
Virginian Gasoline & Oil Co., St. Albans	Kanawha County	Char.	3,500
Virginian Gasoline & Oil Co., Louisia, Ky.	Wayne County	Char.	*3,500
Virginian Gasoline & Oil Co., Hubball	Lincoln County	Char.	12,000
Virginian Gasoline & Oil Co., Mammoth	Kanawha County	Absp.	2,500
Virginian Gasoline & Oil Co., Blue Creek	Kanawha County	Comp.	1,200
Virginian Gasoline & Oil Co., Stoffel	Kanawha County	Absp.	1,200
Virginian Gasoline & Oil Co., Elkview	Kanawha County	Absp.	1,000
Virginial Gasoline & Oil Co., Three Mile	Kanawha County	Absp.	3,500
Virginian Gasoline & Oil Co., Pad	Roane County	Absp.	800
Watson, G. L., Parkersburg	Belmont	Comp.	50

WYOMING

Continental Oil Co., Denver, Colo.	Sec. 5, R. 78w, T. 39n	Absp.	14,000
Midwest Refining Co., Midwest	Sec. 36-40-79	Comp.	100,000
New York Oil Co., Casper	Teapot Dome, Naval Reserve No. 3	Comp.	2,000
Ohio Oil Co., Manville	Niobrara County	Absp.	7,500
Ohio Oil Co., Rock River	Carbon County	Absp.	4,500
Ohio Oil Co., Columbus	Natrona County	Absp.	14,400
Ohio Oil Co., Kirby	Hot Springs	Comp.	7,560
Producers & Refiners Corp., Casper	N half NW Sec. 7-33-79	Absp.	30,000
Standard Engineering Corp., Box 1739, Casper.	Casper	Absp.	2,500

NEW EDUCATION FILM

The Pittsburgh experimental station of the Bureau of Mines, Pittsburgh, Pa., has prepared a new educational motion picture entitled "The Story of Gasoline." The picture shows the production and distribution of gasoline from the crude oil wells to the service stations. The film is available without charge except for transportation costs at the Pittsburgh station.

GASOLINE COLLECTION LESS

Despite an increase of 20 per cent in the gasoline tax rate in Oklahoma, the April collections were less than the same month last year. The April collections this year were $945,376 and $1,003,595 in April last year, although the gasoline tax rate had been increased from 4 to 5 cents.

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are ideal for gasoline, kerosene, steam, oil. No matter what the color of the liquid, they show the level in BLACK.

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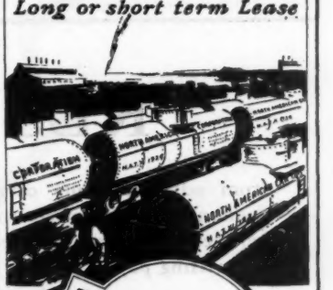
Long or short term Lease



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RESULTS
from advertisements carried in the Classified Wants Section are very satisfactory. Letters received from advertisers who use this section prove that this form of advertising pays.

The cost for a ten-line advertisement (one inch) is $3.50 for the first insertion and $2.50 for each additional insertion.

The OIL and GAS JOURNAL
PRODUCING REFINING MARKETING
TULSA, OKLA.

MAKE FINAL REPORT ON GASOLINE TAXATION

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 18.—During 1930 the grand total earning of gasoline taxes in the United States aggregated $494,683,410, of which amount $493,885,117 was the total tax earning on fuel for motor vehicles and $818,293 was from other receipts under the tax law. These figures were compiled by the Bureau of Roads, Department of Agriculture.

Of the total amount collected $1,102,410 was expended as collection cost, $338,927,564 for state roads, $96,225,637 for local roads, $31,049,036 for state and county road bond payment and $27,378,986 for miscellaneous purposes. The expenditure for miscellaneous purposes includes $11,842,930 for city streets, $13,404,200 for schools and $2,131,856 for various items.

The gasoline taxes levied ranged from 6 to 2 cents a gallon and averages 3.35 cents per gallon for all the states and the District of Columbia.

The net gallons of gasoline taxed and used by motor vehicles amounted to 14,751,308,978 gallons.

New York was in the lead in the quantity of gasoline used, the amount being 1,438,582,716 gallons; California second with 1,162,337,545 gallons; Pennsylvania third with 928,842,534 gallons, and Illfourth with 927,036,272 gallons, and Illinois fifth with 915,747,319 gallons.

Miscellaneous Expenditures

Maryland expended $1,381,438 on Baltimore streets and grade crossing eliminations; also $75,000 to conservation department for oyster beds; the District of Columbia spent its entire gasoline tax for repair and improvement of the streets of Washington, the city covering the entire district; Texas spent a part of its tax collection on free public schools; Mississippi spent a portion of its gasoline tax for a sea wall, and New Jersey expended $90,000 for its free bridge commission and $3,000 for its public utilities commission.

Several states paid their gasoline collection costs from funds appropriated by the state.

LONE STAR CAPACITY IS DOUBLE THAT YEAR AGO

Two plants of the Lone Star Gas Co. have been shut down bringing the operating capacity of the company's plants to 68,000 gallons, compared to 100,000 gallons a year ago. These plants are 15,000 gallons capacity each, one of which is located in Gainesville, Tex., and the other near Brazos, Tex. Typical of the trend toward the consolidation of operations, these plants have been shut down but the loss of this capacity has been more than equalized by the acquisition of the properties of the Chestnut & Smith Corp. in the Ranger district. These plants have been operated under the name of the Lone Star Gasoline Co. and the combined operating capacity of all plants has been increased 117,000 gallons to a total of 185,000 gallons at present.

The Chestnut & Smith purchase included seven plants all of which are operating and the seven plants operating under the Lone Star Gas Co. brings the total number to 14. In the past year the 2,000-gallon plant formerly located 6 miles southeast of Desdemona was dismantled.

MELLON INSTITUTE PUBLICATION

Mellon Institute of Industrial Research, Pittsburgh, Pa., has issued the fourth annual supplement to its Bibliographic Bulletin No. 2, listing the books, bulletins, journal contributions, and patents of the institution's members during 1930. The institute has also published the eighteenth annual report of its director, Dr. E. R. Weidlein, describing the investigational activities. Complimentary copies will be sent to research workers, science teachers, and librarians upon request.

PROPOSE HIGHER TAX

Bills proposing an increase in the gasoline tax from 6 to 7 cents and the imposition of an intangible tax have been introduced in the Florida senate.

LEGALS

Department of the Interior, Washington. Call for bids to Purchase Royalty Oil and Royalty wet gas accruing to the United States from the North Dome, Kettleman Hills, California, oil and gas field. Pursuant to the provisions of Section 36 of the act approved February 25, 1920 (41 Stat., 437), sealed proposals, in duplicate, will be received in the office of the Secretary of the Interior, Washington, D. C., on or before noon on June 1, 1931, from responsible bidders for the purchase, for a period beginning July 1, 1931, of all royalty oil and of all royalty wet gas accruing to the United States from Government lands in the North Dome, Kettleman Hills, California, oil and gas field. Information as to the approximate quality and quantity of the oil and wet gas offered for sale may be obtained from the Director, Geological Survey, Department of the Interior, Washington, D. C., or the Supervisor, Geological Survey, Taft, California. Bids are invited on six separate items as follows: Item 1.—Royalty oil for the period beginning July 1, 1931, and ending March 31, 1932. Item 2—Royalty oil for the period beginning July 1, 1931, and ending March 31, 1934. Item 3—Royalty oil for the period beginning July 1, 1931, and ending March 31, 1936. Item 4—Royalty wet gas for the period beginning July 1, 1931, and ending March 31, 1932. Item 5—Royalty wet gas for the period beginning July 1, 1931, and ending March 31, 1934. Item 6—Royalty wet gas for the period beginning July 1, 1931, and ending March 31, 1936. Bids for oil must be a differential stated in cents per barrel over the average monthly field price received for all other oil produced in said field by the Kettleman North Dome Association, and bids for wet gas may be stated either as a flat rate in cents per thousand cubic feet or as such flat rate plus a differential in cents per gallon of gasoline content. Delivery of royalty oil and royalty wet gas will be made in the field by the Kettleman North Dome Association without cost to the Government to the successful bidder or for his account. Payments for the royalty oil and royalty wet gas are to be made to the Register of the United States Land Office, Sacramento, California, on or before the fifteenth day of each month following that in which delivery is made. The quantity and quality of the oil will be determined by tests, corrected for impurities, and the volume computed in terms of standard barrels at 60° F.; the quantity of gas will be determined by orifice meters using a standard pressure base of 14.73 pounds per square inch and standard temperature of 60° F., and the gasoline content of gas will be determined by standard charcoal or other tests satisfactory to the Government. Each bidder must submit with his bid a bond in the sum of $1,000 or a certified check payable to the order of the Secretary of the Interior in the sum of $1,000 as a guarantee that he will, if successful, promptly execute a satisfactory contract and furnish a bond in the sum of at least $100,000, conditioned upon full and complete compliance with the terms of the contract. The Secretary of the Interior may accept the offer of the highest bidder and/or bidders and reserves the right to reject all bids whenever within his judgment the interest of the United States demands. Sealed bids are to be submitted to the Secretary, Department of the Interior, Washington, D. C., the envelope to be marked plainly "Bid on Kettleman Hills royalty oil" and/or "Bid on Kettleman Hills royalty wet gas." No bid received after the time herein fixed for submitting bids will be considered. (Sgd.) Ray Lyman Wilbur, Secretary of the Interior. April 23, 1931.

Sale of oil and gas leases. Department of the Interior, United States Land Office, Las Cruces, New Mexico. Notice is hereby given that the following described land in Eddy County, New Mexico, is offered for lease under Section 17 of the act of February 25, 1920 (41 Stat. 437), at the customary royalty schedule in the standard lease form, and subject to the following conditions: 1. Unit No. 1: T. 15 S., R. 27 E., N.M.P.M.—Sec. 4, NE¼, NE¼, NW¼—200 acres. 2. The lessee shall agree to unite with others in adopting and operating under a cooperative or unit plan of development or operation of said field whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest, and 3. The lessor consents that, if the oil and gas resources of said land can be recovered adequately by means of wells drilled, or to be drilled on adjacent lands, in lieu of drilling and producing wells on the leasehold, the lessee may pay a sum estimated to reimburse the United States for current loss of royalty, such sum, unless determined under a cooperative or unit plan of operation approved by the Secretary of the Interior, to be fixed monthly by the supervisor of oil and gas operations, subject to approval by the Secretary of the Interior whose decision shall be final. Said lease will be offered for sale at public auction in the United States Land Office, Las Cruces, New Mexico, at 10 O'clock A.M. on May 23, 1931, to the highest qualified bidder on the terms specified. The successful bidder must deposit on the date of sale with the officer in charge of the sale, a certified check on a solvent bank, or cash, for one-fifth of the amount bid by him and file the showing of qualifications to receive a lease required by Section 15 of the said regulations. Bidders are warned against violations of the provisions of Section 59, U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. (Signed) V. B. May, Register.

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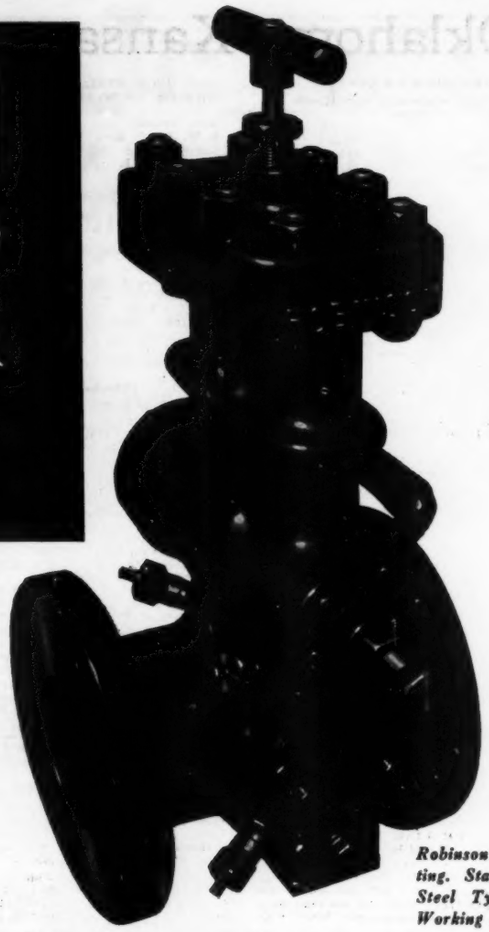

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for March

Runs	Month (bbls.)	Dy.av. (bbls.)
Prairie Pipe Line Co.*	995,100	32,100
Gulf Pipe Line Co.	1,231,758	39,734
The Texas Pipe Line Co. of Okla.	679,836	21,930
Magnolia Pipe Line Co.	1,518,727	48,991
Cosden Pipe Line Co.	744,653	24,021
Empire Pipe Line Co.	1,881,298	60,687
Stanolind Pipe Line Co.*	3,224,000	104,000
Oklahoma Pipe Line Co.	2,459,757	79,347
Other lines*	7,068,000	228,000
Total, March	19,803,129	638,810
Total February	17,138,296	612,082
Difference	2,664,833	26,782
Shipments		
Prairie Pipe Line Co.†	2,095,817	67,607
Gulf Pipe Line Co.	1,562,856	50,415
Texas Pipe Line Co. of Okla.	1,262,632	40,730
Magnolia Pipe Line Co.	1,286,462	41,498
Cosden Pipe Line Co.	699,793	22,574
Empire Pipe Line Co.	1,797,431	57,982
Stanolind Pipe Line Co.†	3,534,651	114,021
Oklahoma Pipe Line Co.	2,424,293	78,203
Other lines*	7,099,000	229,000
Total March	21,762,925	702,030
Total February	19,021,890	678,460
Difference	2,741,035	23,570
Stocks		
Prairie Oil & Gas Co.	37,274,000	
Gulf P. L. & Gypsy Oil Co.	8,710,058	
The Texas Company	3,821,029	
Magnolia Petroleum Co.	6,323,742	
Mid-Continent Petr. Corp.	3,727,882	
Empire Pipe Line Co.	5,405,052	
Stanolind Crude Oil Pur. Co.	18,306,000	
Oklahoma Pipe Line Co.	2,563,570	
Carter Oil Co.	8,888,504	
Other lines	22,175,000	
Total March	117,204,838	
Total February	118,434,237	
Difference	1,229,399	

*Estimated. †Prairie and Stanolind shipments include Texas crude oil.

EASTERN PIPE LINE REPORT FOR MARCH

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for February and March:

	Feb. '31	Mar. '31
Nat. Transit	121,907.94	137,918.13
S. W. Pa. P. L.	66,984.81	73,145.44
Eureka P. L.	371,589.15	294,873.88
Buckeye P. L.: (Macksb'g)	283,050.42	311,712.85
Buckeye P. L.: (Cleveland)	10,192.36	11,769.49
Buckeye P. L.: (Lima, etc.)	78,304.68	79,000.44
Indiana P. L.	3,593.85	3,199.09
Cumberland P. L.	158,426.62	168,106.26
N. Y. Transit	25,972.80	28,392.78
Tide Water P. L.	23,230.37	24,005.40
Pure Oil	188,721.57	212,358.30
Stoll Oil Ref.	25,934.10	23,191.99
Bradford Tran.	286,659.50	307,597.03
Total	1,544,567.64	1,684,271.08
Daily average	55,163.13	54,331.32

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for February and March:

	Feb. '31	Mar. '31
Nat. Transit	434,836.96	565,089.04
S. W. Pa. P. L.	349,431.73	423,661.54
Eureka P. L.	329,203.94	328,329.66
Buckeye P. L.: (Macksburg)	255,836.89	265,351.57
Buckeye P. L.: (Cleveland)	1,708.34	2,440.89
Buckeye P. L.: (Lima, etc.)	1,346,381.03	1,601,658.90
Indiana P. L.	704,037.29	737,337.17
Cumberland P. L.	95,198.73	110,949.07
Southern P. L.	36,948.86	79,090.42
N. Y. Transit	158,600.37	187,287.69
Northern P. L.	159,788.80	177,499.13
Tide Water P. L.	454,444.14	362,962.53
Pure Oil	138,500.91	246,505.63
Bradford Tran.	337,789.39	341,249.76
Tuscarora	335,131.21	443,677.56
East Gulf Oil	.....	1,674.23
Total	5,137,844.59	5,874,764.79
Daily average	183,494.45	189,508.54

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of February and March:

	Feb. '31	Mar. '31
Nat. Transit	823,437.33	745,113.23
S. W. Pa. P. L.	432,681.19	369,482.29
Eureka P. L.	1,599,276.50	1,819,344.51
Buckeye P. L.: (Macksburg)	592,937.82	565,767.95
Buckeye P. L.: (Cleveland)	28,449.28	49,352.24
Buckeye P. L.: (Lima, etc.)	4,308,481.54	3,619,980.13
Indiana P. L.	546,697.37	611,627.34
Cumberland P. L.	645,138.76	652,425.69
Southern P. L.	323,636.70	270,576.36
N. Y. Transit	120,111.18	148,013.40
Northern P. L.	326,464.55	342,330.93
Tide Water P. L.	944,654.28	1,030,157.40
Pure Oil	649,860.39	625,831.52
Tuscarora	18,749.38	13,347.56
Brad. Trans.	141,853.72	143,165.90
East Gulf Oil	.....	4,647.01
Total	11,506,489.99	11,012,162.56
Decrease	324,602.91	494,327.42

Grades of Oil

The following table shows the amount of the different grades of oil held by eastern pipe lines at the close of February and March, showing gross stocks of the above fields:

	Feb. '31	Mar. '31
Pennsylvania	3,844,013.10	3,847,629.68
Lima	804,771.54	791,559.51
Kentucky	655,160.44	667,373.51
Mid-Continent	5,564,637.27	5,090,403.32
Michigan	637,917.64	615,196.54
Total	11,506,489.99	11,012,162.56

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1928	1929	1930	1931
January	52,904	51,749	75,907	53,939
February	57,002	51,833	79,256	55,163
March	57,485	54,252	76,688	54,331
April	56,812	58,444	84,536	.....
May	62,067	59,902	80,548	.....
June	58,230	58,823	75,430	.....
July	57,144	66,087	68,921	.....
August	57,745	66,087	54,291	.....
September	53,487	67,315	56,595	.....
October	58,100	76,093	58,179	.....
November	53,865	74,831	53,332	.....
December	52,025	74,561	53,999	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1928	1929	1930	1931
January	146,465	165,721	217,623	175,369
February	167,368	159,387	224,355	183,494
March	158,883	161,474	228,846	189,608
April	172,935	169,737	241,845	.....
May	180,559	184,281	248,383	.....
June	188,024	185,404	234,401	.....
July	189,470	194,762	207,094	.....
August	192,853	194,946	205,806	.....
September	194,138	201,214	193,999	.....
October	176,000	191,367	157,675	.....
November	176,898	202,743	146,638	.....
December	173,573	186,257	143,001	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1929	1930	1931
January	7,596,564	12,220,045	11,831,093
February	8,738,835	12,991,561	11,506,489
March	9,002,068	13,247,217	11,012,162
April	8,978,172	13,233,961	.....
May	8,903,560	13,052,953	.....
June	8,921,375	13,396,885	.....
July	9,211,595	13,268,562	.....
August	9,440,648	13,047,051	.....
September	9,443,067	12,812,018	.....
October	9,441,101	12,437,555	.....
November	9,868,538	11,851,380	.....
December	11,253,953	11,751,952	.....

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, April 1	2,834,668.46
Runs from wells	400,632.83
Other receipts	208,484.64
Regular deliveries	332,657.86
Other deliveries	188,320.28

The amount of Illinois oil run by the Tide Water Pipe Co. in March was 24,005.40 bbls. Deliveries were 24,006.40 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1931—	Runs	Deliveries
March	424,638.23	356,663.26
1930—		
January	543,387.95	498,393.91
February	548,416.33	414,526.53
March	631,944.49	469,119.53
April	530,074.22	509,304.60
May	606,147.37	504,069.84
June	573,662.57	468,658.81
July	604,539.54	388,454.47
August	594,642.12	376,742.43
September	457,001.11	371,691.63
October	478,442.12	320,688.73
November	432,794.68	355,403.12
December	556,418.78	363,719.58
1931—		
January	468,429.04	669,573.19
February	439,284.54	461,263.85

Tide Water Pipe Co., Ltd., also delivered in March 175,613.44 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
April	7,767	.....	14,369	11,600	7,433	41,167	.....	.....	.....	.. ..	7,600	48,767
May	5,194	8,451	28,161	9,484	2,774	54,064	.....	...	.....	.....	774	54,838
June	8,300	.....	33,933	20,767	2,338	65,338	.....	.....	.....	.....	2,400	67,738
July	17,355	7,774	43,419	28,839	6,452	98,839	.....	.....	.....	.....	4,645	103,484
August	7,413	8,742	38,968	21,226	5,258	81,613	.....	.....	.....	.....	97	81,710
September	6,300	6,400	25,600	13,400	9,567	61,267	.. ..	.....	.....	.....	2,433	63,700
October	2,516	8,065	27,258	16,419	4,903	54,161	.....	...	.....	.....	5,355	59,516
November	5,367	6,233	33,800	17,733	4,600	70,733	.....	.....	.....	.....	4,800	75,533
December	5,516	4,323	30,645	9,678	3,580	53,743	.....	.....	.....	.....	4,645	58,387
January	8,357	6,613	21,968	14,678	11,096	62,742	.....	.....	.....	.....	6,129	68,871
February	6,787	2,713	29,143	4,000	5,750	47,393	.....	.....	.....	.....	3,750	51,143
March	10,032	1,611	21,388	7,324	8,774	49,129	.....	.....	.....	.....	6,355	55,484

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
April	31,400	8,933	123,500	40,433	18,434	223,700	.....	7,400	2,433	4,167	14,000	237,700
May	24,129	9,322	174,194	39,291	28,226	275,161	5,194	11,548	2,935	4,323	24,000	299,161
June	51,533	15,667	121,067	45,033	25,033	258,333	4,413	17,367	2,167	1,333	25,300	283,633
July	42,097	9,548	154,968	37,935	36,032	280,580	5,678	9,161	2,097	2,387	19,323	299,903
August	39,033	4,484	145,613	33,355	25,097	247,581	8,419	9,322	3,548	2,000	29,290	276,871
September	38,867	8,533	150,933	34,500	25,567	258,400	6,433	12,234	.....	3,800	22,467	280,867
October	19,839	11,742	146,194	35,355	26,967	240,097	6,065	7,067	2,774	2,545	18,451	258,548
November	39,633	35,900	124,633	36,467	24,667	261,300	2,467	7,366	.....	1,767	11,600	272,900
December	31,419	14,033	122,774	32,839	23,774	224,839	6,290	10,613	2,097	290	19,290	244,129
January	17,613	13,519	154,225	32,902	30,612	248,871	2,032	11,677	2,097	2,097	18,903	267,774
February	31,321	16,929	127,786	31,714	26,857	234,607	4,536	11,571	.....	536	16,643	251,250
March	27,645	18,935	141,160	26,290	21,129	233,161	4,065	2,580	.....	1,968	8,613	246,774

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

1930—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
April:	Month	18,768,742	19,541,310	24,799,763	3,734,252	1,724,460	1,909,552	2,334,810	4,257,000	77,069,891
	Daily average	625,625	651,377	826,659	124,475	57,482	63,652	77,827	141,900	2,568,996
May:	Month	19,044,444	20,587,502	26,219,488	3,972,385	1,859,896	1,907,452	2,565,219	4,414,000	80,376,776
	Daily average	614,337	664,113	845,786	128,235	59,545	61,543	82,749	142,387	2,592,790
June:	Month	18,020,795	19,754,700	25,642,705	3,765,060	1,704,060	1,925,621	2,519,190	4,288,000	77,621,131
	Daily average	600,693	658,490	854,790	125,502	56,802	64,187	83,973	142,933	2,587,371
July:	Month	18,802,024	18,032,514	25,973,521	3,541,409	1,713,680	2,079,769	2,275,894	3,830,000	77,248,811
	Daily average	606,517	581,694	857,856	114,239	55,280	67,089	105,674	123,548	2,491,897
August:	Month	18,770,466	17,162,034	25,069,598	3,491,530	1,700,102	2,151,120	3,193,341	3,417,000	74,955,191
	Daily average	605,499	553,614	808,696	112,630	54,842	69,391	103,011	110,226	2,417,909
September:	Month	17,984,306	16,509,120	23,111,822	3,405,510	1,583,280	2,008,060	3,239,010	3,396,000	71,237,108
	Daily average	599,477	550,304	770,394	113,517	52,776	66,935	107,967	113,200	2,374,570
October:	Month	18,244,053	16,632,523	23,626,553	3,571,913	1,636,552	2,142,885	3,225,550	3,627,000	72,707,029
	Daily average	588,518	536,533	762,147	115,223	52,792	69,125	104,050	117,000	2,345,388
November:	Month	18,109,459	14,941,770	22,035,222	3,459,330	1,557,870	2,136,948	2,957,100	3,222,000	68,419,699
	Daily average	603,648	498,059	734,507	115,311	51,929	71,231	98,570	107,400	2,280,654
December:	Month	17,786,728	15,057,103	21,810,359	3,422,661	1,590,951	2,157,534	3,118,663	3,325,000	68,281,999
	Daily average	573,765	485,713	703,560	110,731	51,321	69,598	100,602	107,355	2,202,644
1931—										
January:	Month	16,485,798	14,850,952	20,690,452	3,149,073	1,574,955	2,131,937	2,966,142	3,274,000	65,223,310
	Daily average	531,796	479,063	667,435	101,583	50,805	68,772	95,682	105,639	2,103,978
February:	Month	14,930,932	13,371,876	18,964,596	3,269,016	1,402,492	1,981,476	2,747,024	3,129,000	59,896,412
	Daily average	533,248	477,567	677,307	120,322	50,089	70,767	98,108	111,750	2,139,158
March:	Month	16,364,842	16,430,341	22,975,309	3,498,598	1,444,941	2,012,197	2,897,725	3,374,000	69,019,263
	Daily average	527,898	530,011	741,139	112,858	46,611	65,587	93,475	108,839	2,226,428
Total 12 months		213,312,590	202,871,747	280,920,388	42,396,738	19,293,238	24,545,941	35,039,668	43,656,000	862,056,620